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NAUTICAL DICTIONARY.

NAUTICAL DICTIONARY:

CONTAINING

EXPLANATIONS OF TERMS AND PHRASES

USED IN

THE BUILDING AND OUTFIT OF SAILING VESSELS AND STEAM-SHIPS;
IN SEAMANSHIP, NAVIGATION, AND NAUTICAL ASTRONOMY;
AND IN NAVAL GUNNERY:

A DESCRIPTION OF THE MARINE STEAM-ENGINE AND NOTICE OF THE SCREW-PROPELLER: WITH SHORT PRACTICAL TREATISES ON THE VARIOUS BRANCHES OF MARINE INSURANCE AND AVERAGE,

AND

General Information in regard to Maritime Affairs.

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PREFACE.

THE design of the present work is to supply the want of a book of reference for nautical expressions now in use, as well as to afford general information on maritime subjects important to seamen and useful to those who are in any way connected with or interested in shipping.

In its compilation, occasional advantage has been taken of definitions and explanatory matter found in various works of eminence: in particular, on the subjects of Shipbuilding, Seamanship, Navigation, and Nautical Astronomy, the following publications have been made available—

Creuze's Treatise on Naval Architecture;
The Shipwright's Vade Mecum;
Blackburn's Treatise on the Science of Shipbuilding;
Brindley's Compendium of Naval Architecture;
Hedderwick on Shipbuilding *(a most valuable Treatise on the construction of merchant vessels)*;
Darcy Lever's Young Sea Officer's Sheet Anchor;
Dana's Seaman's Manual;
Seamanship both in Theory and Practice;
Norie's Epitome of Navigation and Nautical Astronomy;
Raper's Practice of Navigation and Nautical Astronomy;
Mrs Taylor's Epitome of Navigation and Nautical Astronomy;
Riddle's Epitome of Navigation and Nautical Astronomy;
Squire's Grammar of Astronomy; and
Baharie's Marine Board Examination at Sunderland:

and in regard to Tides, Atmospherical Phenomena,

Nautical Inventions, Naval Gunnery, Maritime Commerce, the duties of Shipmasters, and other topics, information has often been obtained from—

Horsburgh's India Directory;
Captain Basil Hall's Works, and his contributions to the United Service Magazine;
The Encyclopædia Britannica;
Norie's Epitome (already mentioned);
Scoresby's Account of the Arctic Regions and Northern Whale Fishery;
Brande's Dictionary of Science, Literature, and Art;
The United Service Magazine;
The Nautical Magazine;
The Practical Mechanic and Engineer's Magazine;
Stevenson's Civil Engineering of North America;
Clement's Customs' Guide;
Pope's Yearly Journal of Trade;
Steel's Shipmaster's Assistant (of which a new edition has recently appeared);
Waterston's Cyclopædia of Commerce; and
Lorimer's Letters to a Young Master Mariner.

Useful assistance has also to a certain extent been derived from the writings of Captain Marryat, Captain Chamier, Mr Cooper, Mr Scott, and Lieutenant Bowyer.

In the general arrangement, and otherwise, Dr Burney's comprehensive Edition of Falconer's Dictionary of the Marine (published in the year 1815) has been found a convenient guide. That "great national work" affords abundant explanations of obsolete terms, and it embraces an extensive field of historical, scientific, and statistical information, &c., beyond the scope of this Nautical Dictionary.

Holt's Shipping and Navigation Laws, Marshall on Insurance, Tenterden's Treatise of the Law relative to Merchant Ships and Seamen (Serjeant Shee's Edition), and Hildyard's Edition of Park on Insurance, especi-

ally the last mentioned authority, have frequently supplied the groundwork for articles concerning Maritime Law. The Law of Shipping and Insurance by Mr Lees, wherein a variety of English and Scotch decisions are systematically but briefly noticed, has also been of service, along with Mr Symons's Treatise on the Law relating to Merchant Seamen, and Harrison's Analytical Digest of Decisions and Public Statutes.

The abstract of the Instructions given by the Committee of underwriters at Lloyd's to their agents, the Table of proportions of Anchors and Chains, the Rules for admeasuring the Tonnage of vessels, the account of the Sympiesometer by its inventor, and the directions for the application of Marine Glue, will be found useful additions to this work.

Mr James Brisbane, with whose assistance most of the technical definitions have been constructed or selected, and who has suggested numerous observations in regard to shipbuilding and seamanship interspersed through the following pages, is a "thorough bred" shipwright, has served as a seaman and commanded several coasting steamers, and now acts as superintendent of the Graving Dock and Patent Slip, &c., at Dundee. Mr Brisbane is also experienced in surveys of shipping, and in preparing specifications of repairs to sailing vessels and steamers.

The materials for the description of the Marine Steam-Engine, and the concluding remarks on the Screw-Propeller, have been supplied by Mr Robert Bruce Bell, Engineer in Glasgow, and adjusted with his aid. To the description of the Steam-Engine an alphabetical index is annexed, showing the No. of the section wherein each part of the machinery is explained, and the Fig. of the Plate in which it may be seen.

In conclusion, the Author tenders his warmest thanks

to the many individuals who have favoured him with contributions, or with permission to adopt matter from published works, or rendered him the benefit of their personal experience in the affairs of the Merchant Service and Royal Navy; he feels much gratified in expressly acknowledging the kindness of William Richards, Esq. of Lloyd's, who conceded the use of his Edition of Mr Stevens's celebrated Essay on Average, and in the midst of his arduous professional duties, voluntarily undertook the revision of the treatises on Average and Marine Insurance, and of the various articles relative to Maritime Law.

ERRATA.

BILL OF LADING.—Page 35, line 13th—*For* required—*Read* acquired

CLEARING.—Page 72—13th and 14th lines of 2d paragraph—*Expunge* or coastwise

,, 73—14th line—*Expunge* There are regulations in regard to slates and chalk laden for foreign parts, &c., being considered as ballast.

COAST-GUARD.—*Introduce this head referring to the article* Preventive Service.

DECK-CARGO.—Page 98.—End of 1st paragraph—*For* though, if saved, it must bear its proportion—*Read*, although goods so stowed are subject like the rest of the cargo to bear a proportion

NAVY.—List of ratings. *For* first "rated," second "rated," &c.—*Read*, "classed." At foot of page, insert comma after *Sloops of War*, instead of after *Bomb-ships*.

MANIFEST.—Page 203—Last paragraph—*Expunge* nor tobacco in any ship, *and* A separate one is required for tobacco.

SEAMAN.—Page 266.—*For* 3 and 4 Will. IV. c.—*Read*, 8 and 9 Vict. c. 88.

,, section 16 ,, section 17

,, the space of three years. ,, the space of two years.

Page 267—4th line— ,, section eighteen ,, section 19

The definitions of *Berthing*, *Bucklers*, and *Declination*, and the sentence on page 18 as to the valuing of foreign ships, ought to bear the marks of quotation.

N.B.—Special attention should be directed to the remarks No. IV. of Appendix.

NAUTICAL DICTIONARY.

ABACK. The position of the sails of a vessel, when their surfaces are pressed aft by the force of the wind. *All Aback* implies that all the sails are aback. The sails are *laid aback*, when they are intentionally adjusted in the above manner, either to stop the ship, to deaden her way, or to make her move astern. They are *taken aback*, when suddenly thrown aback by a change of wind, or through the negligence of the helmsman. See *Brace Aback* and *Full.*

When the action of a Marine Engine is reversed, so as to urge the steam-vessel astern, the Machinery is said to *work aback.*

ABAFT. Behind; nearer, or towards the stern of a vessel. This term is not used with reference to things out of the ship.

Abaft the Beam. See *Bearing.*

ABANDONMENT, in Marine Insurance, implies the yielding up to the insurer what may be saved of the property insured (in the event of some misfortune, for the consequences of which he is responsible, having taken place), and claiming as for a total loss. In any case where the insured has the privilege of abandoning, he must make his choice promptly, and give the underwriters notice thereof within a reasonable time, which in one instance has been held to be immediately after a complete report of surveyors is obtained (*Gernon v. Royal Exch. Assu. Co.*, 1 *Holt* 49): in all cases he may choose not to abandon, but he is not allowed to lie by and treat the accident for a time as a partial loss

taking the chance of making the best for himself, and, when he finds that this will not answer, convert it into a total loss by abandoning to the underwriters (*Marshall on Insurance—Hughes on Insurance*). Accordingly, it appears that if the insured, contenting himself with the information furnished to him, allows the repairs to the ship to be proceeded with, he is foreclosed from abandoning. Again, where a stranded vessel continued to be laid under water for a month, it was held (7 *East. Rep.* 38) that the proprietors of the cargo of corn were not entitled in the first place to recover and kiln dry the grain, and afterwards abandon when they found that this latter step would be for their advantage.

Abandonment cannot be allowed in order to enable the insured to avail himself of having overvalued the property, or for the purpose of converting what is truly a partial loss or particular average into a total loss *(Hildyard's Edition of Park on Insurance).* The mere stranding of a vessel is not of itself sufficient to entitle the insured to abandon her to the underwriters; to give him such a right, the stranding must be followed by shipwreck, or in some way render the ship incapable of prosecuting her voyage. Capture by an enemy or pirate, or an arrest of princes, or even an embargo, is *prima facie* a total loss which will justify abandonment; but the insured can abandon "only while it is a total loss and he knows it to be so; not after he knows of the recovery." If the thing insured be recovered before any loss is paid, he is entitled only to an indemnity "for his loss as it stands at the time of the action brought or offer to abandon." Again, after abandonment has been made, and a total loss paid, the insured is not obliged to refund the money which he has received, should the property be afterwards recovered, *(Marshall on Insurance).*

"If the right to abandon be good," observes Mr William Richards of Lloyd's, "the underwriter at once becomes liable for a total loss, notwithstanding he would not receive the notice of abandonment. If, however, the insured, after giving such notice, take steps to realize the salvage, or otherwise exer-

cise ownership, he waives the notice he gave, which thereby becomes invalid. But as the notice is almost always refused by the underwriter, it is sometimes the case that the insured, by consent of the underwriter, is permitted to act for the benefit of whomsoever it may concern, in realizing the salvage, or in other necessary acts, 'without prejudice to the abandonment,' so that the rights of both parties continue the same as they were when the abandonment was made, notwithstanding the subsequent interference of the insured;" and in this case it is the duty of the latter to use his utmost endeavours to make the most of what may be rescued from destruction, so that the burden of the insurers may be lightened as much as possible.

Should the loss happen at a great distance, then, until the insured has an opportunity of knowing what has happened, and exercising his own judgment, the acts of the ship-master do not prejudice his right to abandon. For the master is bound "to do the best in his power for the benefit of all concerned, to exercise all his courage, skill, and industry in the protection and preservation of the ship and cargo;" and for the consequences of whatever it was right for him to do, if the property were his own, the underwriters must answer *(Marshall on Insurance)*.

ABEAM *of any vessel*; the same as *On her Beam*. See the article *Bearing*. *Guns* are said to be pointed abeam, when they are pointed in a line at right angles to the ship's keel.

ABOARD. On board, within or on the deck of a vessel. See *Keep the Land Aboard* and *Tack*.

Fall Aboard of. To strike or drive against another ship.

ABOUT SHIP! The order to tack.

Ready About! An order to the crew that all hands be at their stations, ready for tacking.

ABREAST *of any place*, means off or opposite to it. One vessel is said to be abreast of another, when directly upon the line of her beam.

A-BURTON. *Casks are said to be stowed a-burton*, when placed athwartships in the hold.

ABUT. The same as *to Butt.*

ACCOMMODATION-LADDER. See *Ladder.*

A-COCK-BILL. The position of an *anchor* when it hangs down by its ring from the cathead. *To cockbill the anchor,* is to bring it into this position.

Yards are said to be a-cock-bill, when they are topped up at an angle with the deck.

ADJUSTMENT, in marine insurance, the final arrangement of claims for loss or damage to be settled by the underwriters.

An Adjuster of Averages, or *Average Stater,* is an individual employed to adjust, that is, to make out statements (or *adjustments*) of such claims, whether of average or of salvage loss. He commonly acts also as an arbitrator in cases of dispute.

ADMIRAL *in the Royal Navy.* An officer of the highest rank in a fleet, distinguished by a square flag which is carried above the main-mast. Next to him is the VICE-ADMIRAL, whose flag is carried above the fore-mast. Next, the REAR-ADMIRAL, whose flag is carried above the mizen-mast.

The Admirals of Her Majesty's Navy are classed into three squadrons, named after the colours of their respective flags, viz. the *red,* the *white,* and the *blue;* these have precedence in the order here noted.

ADMIRALTY. The office and jurisdiction of the Lords Commissioners appointed to take the general management of maritime affairs, and of all matters relating to the Royal Navy, with the government of it in its various departments.

The High Court of Admiralty is a supreme tribunal wherein cognizance is taken by the Judge of the Admiralty, of maritime cases, whether civil or criminal. He has jurisdiction to decide questions as to the title or ownership of any vessel, or the proceeds thereof, remaining in the registry of the said court, arising in any cause of possession, salvage, damage, wages, or bottomry, instituted in that court—to take cognizance of all claims for salvage or towage, and for necessaries supplied to foreign vessels—and of all claims and causes of action in respect to any mortgages of vessels arrested

by process issuing from the court, and questions relating to booty of war which her Majesty may refer to its judgment—and so on *(Statute* 1840*)*. *Vice-Admiralty Courts* are, for the like purposes, instituted in various part of the empire; from whose decisions an appeal lies to the High Court of Admiralty.

DROITS OF THE ADMIRALTY. Vessels improperly captured before a declaration of hostilities are considered *Droits of the Admiralty,* implying "that they are not given as lawful prize to the captors, but claimed and applied as *droits* (rights) of the Sovereign." Goods found derelict, or under the denomination of *flotsam, jetsam,* or *lagan,* if not claimed within twelve months, are also deemed to be Droits of the Admiralty (Act 3 and 4 Will. IV. c. 52).

ADRIFT. A ship or boat is said to be *adrift,* when broken loose from her anchors or moorings.

AFFREIGHTMENT. See *Charter.*

AFLOAT. Borne up by the water.

AFORE. Before: towards or nearer the bow of a vessel. *Abaft* is the opposite term.

AFT. Behind or nearer the stern of a vessel: the reverse of *Fore,* which see.

We say that an object is *right aft,* when it is astern of the ship, in the direct line of of her keel.

To haul aft a sheet, means to pull it more towards the stern. This phrase implies the trimming of a sail so as to come nearer the wind. *To ease off the sheet* is the reverse.

AFTER-END *of a vessel,* her stern; *of any thing in the ship,* that end of it which is next the stern.

AFTER-PEAK. See *Fore-Peak.*

The AFTER-SAILS and AFTER-STAYS comprehend all those which are abaft the centre of the vessel; those upon the foremast and bowsprit being termed the *head-sails* and *head-stays.*

AGENT. A person employed to transact business for another: the person so employing him is termed the *principal.* See *Factor,* and *Brokers (Insurance).*

NAVY AGENT. An agent employed for behoof of officers

or seamen in the Royal Navy to receive their pay, &c., and to apply it as they may direct.

AGROUND. The situation of a vessel when her bottom rests upon the ground.

AHEAD. Before a vessel's head; further in advance of her. ASTERN is the opposite term. They are used with reference to the relative position or motion of other objects, and to the movement of the ship herself. See *Bearing.*

AIR-CONE. See description of *Steam Engine,* sect. 19.

AIR-PUMP, with its appendages. See description of *Steam Engine,* sect. 14 to 19.

A-LEE. The position of the helm when the tiller is put down to a vessel's lee-side; as it is in the act of tacking. *A-weather,* is its position when the tiller is put up in the direction from which the wind blows. See *Helm.*

ALIENS. Foreigners, not subjects of this country. The master of any British vessel arriving from foreign parts, is, by the act 6 William IV., c. 11., required (under a penalty), to the best of his knowledge and belief, to declare immediately in writing to the chief officer of customs at the port of arrival, the name or names, rank, occupation, &c., of any aliens then on board the ship, or who have landed therefrom at any place in the United Kingdom. This regulation does not extend to foreign seamen navigating the vessel. (*Steel's Shipmaster's Assistant.*)

ALLOWANCES. The quantum of provisions, &c., served out to seamen on board of a vessel. See *Provisions.* Also a term for refreshments given to shipwrights, labourers, or other workmen: in adjustments of average, such allowances to shipwrights are considered as part of their wages, and treated accordingly.

ALMANACK (Nautical). See *Nautical Almanack and Astronomical Ephemeris.*

ALOFT. Any where up in the rigging, or about the masts or yards of a vessel; particularly above the lower masts.

ALONG-SIDE. Side by side. See *Lie Along.*

ALTITUDE *of a celestial object;* an arc of a vertical

circle, contained between the centre of the object and the horizon ; in other words, its elevation above the horizon. When an object is on the meridian, its altitude is called *Meridian Altitude.* By observations of these, the latitude of any place may be ascertained.

Altitudes of the sun or moon, taken at sea, require four corrections in order to obtain the true altitude of their centre. These are for semidiameter of the body, dip, refraction, and parallax. In finding the latitude at sea, the parallax of the sun, or of any planet or fixed star, being very minute, does not require to be noticed, nor the semidiameter of a fixed star. (*Norie's Epitome of Navigation and Nautical Astronomy.)*

AMIDSHIPS. In the middle of a vessel. *To put the helm amidships*, is to put it in a line with the keel.

AMPLITUDE *of any celestial object ;* an arc of the horizon contained between the east or west point of the horizon, and the centre of the object at the time of its rising or setting *(Norie's Epitome).* See *Azimuth Compass.*

ANCHOR. A well known instrument by which, when it is dropped to the bottom of the water with a cable attached, a vessel is held fast. In this situation, she is said to be *at anchor. To anchor* or *to cast anchor,* is to drop an anchor and let the ship ride thereby.

The anchor consists of two hooked *arms* for penetrating and fixing themselves into the soil, attached to one extremity of a long bar or *shank,* having a ring at its other end to which the cable is made fast; and the *stock,* which is attached at right angles to this end of the shank. When the anchor is dropped, the stock serves to direct one of the points of the arms downwards into the soil ; the weight of the anchor then causes the point to penetrate more or less according to the softness or hardness of the bottom, and the action of the vessel on the cable has a tendency to fix it deeper. When the stock is made of wood, it consists of two pieces clamped together by strong *hoops,* binding them to the shank ; and the end of the shank is made square to receive and hold it steadily in its place without turning, To

keep the stock from shifting along the shank, there are raised on the latter from the solid iron, or welded on it, two square tenon-like projections called *nuts*. That end of the shank which is next the stock is called *the small round;* the point where the arms and shank unite, *the crown;* and the rounded angle at its junction with each of the arms, *the throat*. A distance equal to that between the throat of one arm and its bill, marked on the shank from the place where it joins the arms, is called *the trend*. The *arms* are made either round or polygonal for about half their length; the remainder of each arm consisting of three parts, the blade, the palm, and the bill. The *blade* is merely the continuation of the arm in a square form towards the *palm* or *fluke*, which is a broad flat triangular plate of iron fixed on the inside of the blade, the use whereof is, by exposing a broad surface, to take the greater hold of the ground. The *bill* or *pea* is the very extremity of the arm, where it is tapered nearly to a point, for the purpose of penetrating readily into the soil. *(Encyclopaedia Britannica).*

Lieutenant RODGER'S PATENT PICKAXE ANCHOR, without Palms, (so called from having arms resembling a pickaxe), and his *Small-Palmed Anchor* are both in high repute. A description of them is given in the 13th volume of the *Nautical Magazine*.

In Mr PORTER'S PATENT ANCHOR, the arms are formed by a bar extending from pea to pea without any crossing or welding, joined to the shank by a bolt forming a pivot, whereon they have free motion towards the shank on either side; near the extremity of each arm there is attached outwardly a spur, horn, or toggle, one of which spurs strikes the ground first when the anchor is dropped, and acts as a fulcrum in bringing the bill also upon the ground; the continued strain of the cable then causes the upper arm to descend and close upon the shank, above which it forms an arch. This kind of anchor is said to bite quickly, and to bear a greater strain, as well as to be less liable to be broken by sudden jerks, than anchors of the ordinary construction, combining simplicity, strength, and security, in an eminent

degree. *(United Service Magazine; Practical Mechanic and Engineer's Magazine.)*

The Anchors carried in ships of war and merchant vessels are distinguished (without reference to their construction) by the following names:—

The *Sheet Anchor,* the largest of all the anchors; it is a spare one kept in reserve for cases of great emergency Vessels under 200 tons burden are not furnished with a Sheet Anchor.

The *Bower Anchors*—viz., *the best Bower Anchor,* the second in point of size, seldom used on board of merchantmen, but when the working anchor is not thought sufficient, or does not hold, or when some accident befals it: and *the small Bower Anchor,* which in ordinary weather is generally used alone as the working anchor; its cable is usually kept bent and rove through one of the hawse-holes to be in readiness, except in long voyages. All vessels of 200 tons and upwards should be provided with at least *three* Bower Anchors. *The Spare Anchor* is an additional Bower Anchor carried in large vessels or in ships of war; in the latter, it is called the *Waist Anchor.*

The Kedge, a small anchor which is put out by means of a boat, for various purposes: as, to haul by during calm weather in a river (an operation which is termed *Warping* or *Kedging*); or to keep a vessel clear of her anchor, &c. A small vessel has generally two or more kedges; a ship of great burden carries four kedges or upwards.

The Stream Anchor, which is of a size between the small Bower Anchor and the Kedge. It is also used for Warping and like purposes, and sometimes as a lighter anchor to moor by with a hawser.

See *Floating-Anchor, Grapnel, Ice-Anchor,* and also the articles *A-cock-bill, A-peek, A-stay, A-trip, A-wash,* and *A-weigh.*

Back an Anchor. To carry out an anchor beyond the one by which a vessel is riding, in order to take off some of the strain, and so prevent it from being dragged.

Cast Anchor. The same as *to Anchor.*

CAT THE ANCHOR. See *Cathead.*

COCK-BILL THE ANCHOR. See *A-cock-bill.*

COME HOME. An anchor is said to *come home,* when it loses its hold of the ground, and is dragged along by the vessel. See explanation of *Dragging the Anchor.*

COME TO AN ANCHOR. To anchor a vessel.

DRAGGING THE ANCHOR implies the act of the anchor *coming home*; that is to say, when it is dislodged through the violence of the wind, &c., straining the cable so as to tear up the anchor from the bed into which it had sunk, and is dragged along: this is especially liable to take place if the ground be soft and oozy or rocky. In such a case, *the ship is said to drag her Anchor.*

FISH THE ANCHOR. See *Fish.*

FOUL ANCHOR. The Anchor is said *to be foul,* or *to be fouled,* when it hooks some other object under the surface of the water, or when, by the wind suddenly shifting, or the tide turning, the vessel slackens her strain, and swinging round the bed of the anchor, entangles her slack cable about the upper fluke of it. To prevent the latter occurrence, which might have the effect of dislodging the anchor from its bed, it is usual, in light winds, as she approaches the anchor, to draw the slack of the cable into the ship as fast as possible. See *Tending.*

RIDE AT ANCHOR. See *Ride.*

SHEER THE SHIP TO HER ANCHOR. To steer her towards the anchor while weighing it, so as to keep the wind or current a-head, and thus lessen the friction on the hawse-pipe.

SHOE OF THE ANCHOR. See *Shoe.*

The Anchor is said to be *Shod,* when, in breaking out of the ground, a quantity of firm soil adheres to it between the fluke and shank, so as to prevent it from again taking hold. This term is perhaps not in very common use.

SWEEP AN ANCHOR. See the article *Sweep.*

TRIP THE ANCHOR. See *A-trip.*

WEIGH THE ANCHOR. To heave it up from the ground by the cable, in order to prepare for sailing. See *Capstan* and *Windlass.*

To Weigh the Anchor by the Long-Boat is performed by hauling on the buoy-rope with a tackle over the boat's davit. To weigh it by *under-running* is done by placing the cable over the boat's davit head, and under-running the cable till the anchor is nearly apeek, when it is tripped by means of the *buoy-rope*; this is adopted only when the ship cannot get near her anchor for want of water.

The following is a Table of the proportions of Chains and Anchors, adjusted from those issued by Messrs Pow and Fawcus, North Shields, and by Mr J. Gunn, Carron Warehouse, Leith. It seems useful to notice also the lengths of chains, which are not shewn in their Tables.

Average Lengths of Chain required.	Size of Chain.	Weight of Chain per Fathom in lbs.	Size of Rope.	Proof Tons.	Weight of Anchor.	Tonnage of Vessel.
	5-16	5½ to 6	2½	¾		
	3-8	8 to 9	3¾	1½		
	7-16	11 to 12	4	2½	Cwt.	
45 fathoms.	1-2	14 to 15	4¾	3½	2	20
	9-16	18 to 19	5¼	4½	2½	30
	5-8	24 to 26	6¼	6	3	40
60 „	11-16	28 to 30	7	7½	3½	50
	3-4	32 to 34	7¾	9	4	60
75 „	13-16	38 to 40	8¾	11	4½	75
	7-8	44 to 46	9¼	13	5½	95
	15-16	50 to 53	10	15	6½	120
90 „	1	56 to 58	10¾	17	8	150
	1 1-16	63 to 65	11¼	19	9½	180
	1 1-8	71 to 73	12	21½	11	210
	1 3-16	79 to 80	12¾	24	12½	240
	1 1-4	88	13½	27	14	280
110 „	1 5-16	96	14¼	30	15½	320
	1 3-8	106	15	33	17	360
	1 7-16	115	15½	36	18½	400
120 „	1 1-2	125	16	40	20	450
	1 5-8	145	17¼	48	25	550
	1 3-4	170	18½	56	30	700
150 „	1 7-8	195	20	64	37	850
	2	230	22	72	45	1000

The only point of difference between the Tables by Messrs Pow and Fawcus and Mr Gunn is in the column of Weights per fathom in lbs. The column 5½, 8, 11, &c. shews the Weights ascertained by the former; 6, 9, 12, &c. those ascertained by Mr Gunn. From 88 to 125 their results

coincide, and the remainder of the Table downwards is a continuation by Messrs Pow and Fawcus.

ANCHORING GROUND. See *Anchorage.*

ANCHOR-LINING. The same as *Bill-boards.*

ANCHOR-STOCK. See description of *Anchor.*

In shipbuilding, the term *Anchor-stock* is applied to a mode of working planks by fashioning them in a tapering form from the middle so as to resemble the stocks of anchors, and placing them so that the broad or middle part of one plank shall be immediately above or below the butt of two others. *Top and Butt* implies a method similar to this.

ANCHOR-WATCH. See *Watch.*

ANCHORAGE or ANCHORING-GROUND. A bottom suitable, from its depth and the nature of the ground, for casting anchor upon. Clay is considered to be of the best holding nature.

Anchorage also implies a duty charged against ships for the use of a roadstead or harbour.

ANEMOMETER. An instrument for registering the varying forces and directions of the wind. These are marked by means of a pencil guided by mechanism over a cylinder covered with paper.

AN-END. To strike any piece of wood *an-end* is to drive it in the direction of its length.

ANGLE-IRON. See *Iron.*

ANTARTIC. See *Zone* (*Frigid*).

A-PEAK or A-PEEK. *An Anchor* is *a-peak*, when the cable has been drawn in till the ship is directly over it, and the *vessel* is then said to be *hove a-peak.* See *A-stay.* A *yard* or *gaff* is *a-peak*, when it hangs obliquely to the mast.

APHELION. That point of the earth's or any planet's orbit which is at the greatest distance from the sun. That point which is nearest the sun is called the *Perihelion.*

APOGEE. That point of the moon's orbit which is farthest from the earth. The point at which she is nearest to the earth is called the *Perigee.* The moon is said to be *in Apogee* or *in Perigee* when at one or other of these points.

APPARENT denotes things as they appear to us, in contradistinction from their true situation or description. Thus we speak of the *apparent distance, motion,* or *magnitude* of a heavenly body.

To find the true distance—that is, to clear the observed distance (or, in other words, the apparent distance ascertained by observation) from the effects of refraction and parallax, is a very intricate calculation in Navigation.

APPRENTICES (*to the Sea*). Youths who are bound, by a writing called an *Indenture,* to serve under the Master of a Vessel for a certain period.

The Master of every Vessel of 80 tons burden and upwards, (except Pleasure Yachts,) belonging to a British subject, is required by the Statute 7 and 8 Vic. c. 112, to have on board, at the time when such vessel proceeds from any port of the United Kingdom, and at all times when absent from the United Kingdom or navigating the seas, one apprentice or more in the following proportions to the number of tons of his ship's admeasurement according to the Certificate of Registry:

80 Tons, and under 200 Tons, One apprentice at least.

200	„	„	400	„	Two apprentices	„	
400	„	„	500	„	Three	„	„
500	„	„	700	„	Four	„	„
700	„	and upwards,			Five	„	„

each of whom must, at the period of his being bound, be above twelve and under seventeen years of age, and must be bound for not less than four years; and no apprenticeship is binding after the apprentice has attained twenty-one years of age.

The required forms of Indenture are given in the Appendix to the Act; in executing which Indentures, due attention must be paid to the statutory regulations, Sections 32 to 42.

In the case of parish apprentices, the outfit for each, furnished by the parish, must be of the value of £5.

The Master must bring every apprentice to procure his Register Ticket, which is to be kept affixed to the Indenture, and these are to accompany the apprentice wherever he may be serving, and to be delivered up to him at the termination of his apprenticeship.

He may be employed in any vessel whereof his master is owner or commander; and cannot be permitted to quit his master's service except for the purpose of entering the Royal Navy, to which step also he must have the consent of his master. If notice of this consent be given to the Secretary of the Admiralty, the master will be entitled to any "balance of wages and prize money" that may become payable to such apprentice until the expiration of his apprenticeship (*Section* 45).

But an Indenture may be cancelled, or may be assigned to the master or owner of any other British registered ship, in the manner, and under the circumstances and regulations laid down in Sections 34, 38, 39, and 40 of the Act.

The cancelling of an Indenture, the death or desertion of any apprentice, and his non-employment in consequence of the ship not having made a voyage for six months, must be notified in writing by the master to the registrar if she belong to London, or otherwise to the collector or comptroller of customs at the outport to which she belongs.

If an apprenticeship expire during a voyage, it is to continue till the arrival of the ship at her final port of destination in the United Kingdom; and after one calendar month from such expiry, the apprentice shall be paid wages as an able or ordinary seaman, according to his qualifications.

APRON, or STOMACH-PIECE. A piece of curved timber which is bolted on the inside of a vessel's main-stem, to strengthen it and to give shifts to its scarphs; the lower end of the apron is scarphed to the fore deadwood-knee. The fore ends of the bow planking are bolted to the apron.

Apron also signifies a square piece of metal used as a cover for the vent and lock or detonating hammer of a gun, in order to keep them dry.

ARCH-BOARD. A plank across a vessel's stern immediately under the knuckles of the stern-timbers; on this, or more commonly on a board called the *name-board*, fitted above it, the ship's name is painted. (Plate II. fig. 5.)

ARCHIMEDEAN SCREW. See *Screw-Propeller*.

ARCTIC. See *Zone (Frigid)*.

ARDENCY. A term used to denote the tendency of a vessel to gripe. If the ship have this tendency, she is accordingly said to be *ardent.*

ARM. The extremity of a yard, beam, or bracket. See also description of *Anchor.*

ARMED SHIP. A merchant vessel taken into the service of Government at any time during war, and fitted out as a ship of war.

ARMOURER *of a ship of war;* a petty officer whose duty is to repair and clean the small arms (namely, muskets, pistols, tomahawks, and boarding-pikes), and to do all kinds of smith work on board.

ARSENIC. This poisonous mineral substance is often mixed with coal-tar and sulphur, for paying the bottoms of vessels, as a temporary protection to the plank from worms.

ARTICLES OF WAR. Certain regulations for the better government and discipline of the Royal Navy. Those at present established by Act of Parliament are thirty-six in number.

ARTILLERY (Royal Marine). See *Marines.*

ASCENSION. *The right ascension* of a celestial body is an arc of the equinoctial contained between the first point of Aries (viz., the point where the equinoctial and ecliptic intersect each other at the vernal equinox) and that point of the equinoctial which is cut by a meridian passing through the body.

The Ascensional Difference is an arc of the equinoctial intercepted between the sun, fixed star, or planet's meridian and that point of the equinoctial which rises with the object.

The Oblique Ascension or *Descension* is the sum or difference of the right ascension and ascensional difference. *(Norie's Epitome).*

ASLEEP. *The canvass is said to be asleep,* when there is just as much wind as to fill the vessel's sails and keep them from shaking.

ASHORE. On the shore or land. Aground.

ASSURANCE [*Insurance*].

A-STAY. *The anchor is a-stay* when, in heaving it, the cable forms an acute angle with the water's edge. This is called a *long stay-peak* or a *short stay-peak* according as the anchor is farther from or nearer to the ship.

ASTERN. Behind a vessel's stern; farther in that direction. See *Ahead* and *Bearing.*

To Drop astern, or *to Fall astern,* is to lessen a ship's way, so as to allow another to get a-head of her, whether intentionally or otherwise.

ASTRONOMY (Nautical.) The science which treats of the heavenly bodies so far as relates to the purposes of navigation. See the articles *Navigation* and *Nautical Almanack.*

A-TAUNT or A-TAUNTO. A cant phrase often used by seamen to imply that a vessel is fully rigged.

ATHWART-SHIPS. Across the ship. The reverse of *Fore-and-aft.*

Athwart the Forefoot, is a phrase applied to a shot being fired across a vessel's way, a little a-head of her, as a warning to bring to or to drop astern.

Athwart-Hawse expresses the transverse position of a vessel when driven across the fore-part of another, whether they come into collision or not; it is most commonly applied to the case of a vessel under sail coming across another which is lying at anchor.

A-TRIP. *The position of an anchor* when it is raised clear of the ground. *A-weigh* has the same meaning. The operation itself is called *tripping the anchor.*

The *topsails* are said to be a-trip, when they are just started from the cap in hoisting. In like manner, an *upper mast* is said to be a-trip, when by means of the tripping-line it is started, preparatory to being sent down.

AUGMENTATION *of the Moon;* the increase of her apparent diameter occasioned by an increase of altitude.

AVAST. Enough—stop—cease.

AVERAGE. There are three kinds of average, viz., *General Average, Particular Average,* and *Petty Average.* The term, however, is mostly used with reference to the two

former, and in its original acceptation it denoted only General Average.

Petty Average is now obsolete; it is what is referred to in the printed part of a Bill of Lading, by the words, "Average as customary;" but this clause is superseded by the agreement that the cargo shall pay a certain sum in lieu of port-charges and other expenses, which are the things originally denominated "Petty Average."

General Average arises in consequence of any sacrifice being voluntarily made, or extraordinary expenses incurred, in the course of a sea adventure, for the joint preservation of ship and cargo; and it implies an assessment or contribution levied on all the parties interested in the ship, freight, and cargo, to make good the loss which has thus fallen upon one or more of them.

For example, if a mast have to be cut away in order to righten a vessel when thrown on her beam ends, or if goods have to be thrown overboard (or, as it is called, *jettisoned)*, to lighten her at sea in a storm, or to float her when stranded —if an anchor be slipped from to avoid any danger—if materials be cut up or used at sea to rig jury-masts, &c.—or other sacrifices be advisedly made for the general safety, the loss thereby occasioned is borne as General Average by those whose property is saved. It may here be noticed that, in the adjustment of such a claim, any of the ship's materials which may have been sacrificed, are subject to the same deductions as would be made in the case of a Particular Average on the ship.

Again, if, while the cargo is on board, expenses be incurred in getting a vessel off the strand, or for salvage services rendered to the ship in distress, these and similar charges are likewise the subject of General Average contribution.

When a vessel with cargo on board has, in the course of her voyage, to put into an intermediate port, in order to repair any damage received, whether that damage belong to General or Particular Average, the practice is to allow in *General Average* the expenses of entering the port, the harbour dues, charges for protest, fees of surveys to ascertain

whether the discharge of the cargo be necessary, the expense of discharging the cargo in order to allow the ship to be repaired, and of conveying it to and depositing it in a place of safety, and so on; and to state the warehouse rent and other charges for the goods against the *cargo* itself—and the cost of re-shipping and charges out of port against the *freight:* should the vessel be unchartered and in ballast, the outward as well as the inward charges should attach to the only interest at risk, viz., the ship. These of course are borne by the respective underwriters, if the property be insured. Where goods are insured "free from Particular Average," the charges for putting them into proper condition—and in the case of grain (when the ship has not been stranded), the expense of drying it, and such like charges, fall upon the owner of the goods, and not upon the underwriters. The wages and cost of provisions to the master and crew during the detention, are borne by the owner of the ship, although the crew have been employed in matters connected with the repair of the ship, or in the discharge or reshipment of her cargo.

The value of the ship for contribution to General Average, is usually fixed by taking an estimate of her value in her damaged condition, and to this adding any amount which may have to be made good in general average, and deducting from it any particular charges incurred previously to the ship being brought into a place of safety; or by taking her value (as nearly as it can be ascertained) previous to the accident, and deducting therefrom the amount of any particular average claim. A *foreign* ship ought to be valued, for contribution to general average, at the sum she is worth to her owner in her own country; because in this country she would be of no value as a ship; and if disposed of here, it could only be for the purpose of breaking up.

The value of the cargo for contribution, if the accident happen at the commencement of the voyage, and the average be then and there adjusted, is its first cost and charges (not including insurance) till on board at the port of loading. If the average be adjusted as at the port of discharge, the contributory value of the cargo is its cash market price there,

stripped of all the charges attaching to it, as freight, duty, and landing charges, but not of the cost of insurance or commission. (*Stevens's Essay*, page 48 and *note*). In either case, the particular charges falling upon the cargo are likewise deducted; and if any of the goods be damaged, it is their deteriorated value which is taken. A contribution to general average can never be properly adjusted at an intermediate port, unless the cargo is disposed of there, and the whole affair wound up on the spot. (See *Deck Cargo* and *Jettison.*)

The value of the freight for contribution, wherever the average is adjusted, is its actual amount, under deduction of the wages for the voyage, and all other expenses to which the shipowner is subjected in the earning of such freight, as well as of the particular charges falling upon it, or any partial loss of it sustained. The provisions for the voyage are included in the value of *the ship* for insurance, and are therefore not to be deducted. Neither do any disbursements for repairs or outfits form part of this deduction. Any advance of wages made to seamen before proceeding on the voyage, may be added to the insured value of the ship; and in like manner, therefore, are not deducted from the freight. It may be well to notice, that if a chartered vessel meet with an accident of the above nature while in ballast on her outward passage, the freight, less wages and other charges *for the whole voyage*, contributes to general average. If unchartered and in ballast on the outward passage, and an average occur during the voyage homewards, the expenses *for the whole voyage out and home* are deducted from the contributory value of the homeward freight. (See *Jettison.*)

So far as concerns any of the interests, it is the value saved which has to contribute; hence, if the freight be consumed by wages and charges, then the general average must be borne by the ship and cargo; but the underwriters on freight (or the owners thereof, if uninsured) still continue liable for the expenses of reloading the goods, or other particular charges attaching to it.

When the whole freight has been paid in advance at the port of loading, and is at the risk of the proprietor of the

cargo or his underwriters, it is added to the value of the cargo for contribution to general average, and the particular charges attaching to freight are in like manner stated against the cargo. When part only is paid in advance, and is not at the risk of the shipowner, a corresponding proportion of the general average and particular charges on freight falls to be entered against the cargo ; and from the contributory value of that part of the freight which is made payable at the port of discharge, only a proportionate amount of the wages and port charges, &c. for the voyage is deducted. But this general rule of including *freight advanced* in the value of the cargo for contribution, would not hold good where an accident occurs at the loading port, and the goods cannot be forwarded.

Particular Average. A term used to signify damage or partial loss unavoidably happening to one of the individual interests, through some peril insured against.

Particular Average on Goods. This properly denotes loss by depreciation in the value of the goods sustained by their being sea damaged.

When they have reached the port of destination, a loss of this description is adjusted by comparing the gross cash market price of the goods, had they arrived in a sound state, with the actual gross sum which they produce by public sale, in their damaged condition; and stating against the underwriters the proportional deterioration on their invoice cost, or on the value in the policy (according as the policy is an open or a valued one), to which are to be added the extra charges that are incurred.

The damaged goods ought to be separated from the sound goods, and to be surveyed, immediately after being landed, by two competent merchants, who should specify the quantity damaged and the quantity sound in each package, the nature of the damage, and the cash market price of the goods, were they in a sound state : and the master of the vessel ought to be called to this survey, in order to certify in writing the nature and cause of the damage. The damaged goods are then brought to sale by public auction. A survey should likewise

be previously made upon the stowage and dunnage of the cargo on board; "which being done for the protection of the shipowner, the expense falls upon him." See abstract of instructions under the head *Lloyd's Agents.*

When damaged goods are sold at an intermediate port in order to prevent farther deterioration, the underwriters are liable as for a total loss thereof, deducting the net proceeds of the sale. They also pay the full freight of such goods, less the freight of any goods which are shipped in lieu of them. This constitutes a *salvage loss* of the goods.

Underwriters are not liable for loss suffered through natural inherent corruption in the goods themselves, nor for the bad effects which may arise from improper stowage or insufficient dunnage.

It is the practice of Lloyd's (acted upon in other quarters) to consider damage done to goods by throwing water down a vessel's hatches, in order to extinguish fire, as particular average on the goods, although damage to the ship, by cutting up the decks, in order to enable this to be done, is considered a subject of general average contribution.

Reference may be here made to the explanation of the Memorandum, under the head *Insurance (Policy of).*

Particular Average on Ship. Under this head are included damage sustained from being driven ashore, or from coming into collision with another vessel—by lightning or accidental fire—plunder or damage in consequence of capture by pirates or an enemy—damage to the ship's upper works, or to her boats (if not hung over the stern), by shipping heavy seas—and similar losses.

The loss of masts by pitching or rolling them away in a heavy cross sea is allowed only when clearly shewn to have been caused by stress of weather, and not through any insufficiency in the spars.

If a privateer (or ship carrying letters of marque) be damaged in defending her against an enemy, the damage and the ammunition expended are considered as the wear and tear of the voyage. In the case of an ordinary merchantman so defending herself, these losses would be recoverable as par-

ticular average on the ship. (*Taylor* v. *Curtis*, 6 *Taunt.* 608.)

The insurers are not liable for "wear and tear;" and under this head it is customary to embrace, among other things, the loss of anchors and cables parted from by the vessel riding hard,—loss, under ordinary circumstances, by an anchor hooking to rocks, by the splitting of a sail, or carrying away of a yard through the force of the wind,—and the repairs of the ship consequent upon springing a leak, by working and straining in a heavy sea. The practice in this last respect is somewhat stringent, claims for recoppering vessels under such circumstances being disallowed, even when it is shewn that the weather encountered was very severe, and that heavy seas were shipped.

In adjusting a claim of particular average on the ship, or of general average where any of the ship's materials have been sacrificed, *one-third* is deducted from the new materials and from the labour at the repairs, unless the vessel be on her first voyage out and home, or the materials sacrificed be *perfectly new*, or the repair be only temporary. It is the practice, however, of many underwriters not to claim this deduction, if the ship be not twelve months old at the date of the accident; and in some Insurance Clubs the one-third is not deducted from labour. No deduction is made from anchors, excepting one-third from the cost of the stock and hoops, when the stock is of wood; and *one-sixth* is deducted from chain cables. The mode of allowing the expense of recoppering vessels is explained under the article *Copper*. Dock-dues, surveyors' fees, and similar accessory charges are allowed in full.

Particular Average on Freight, can arise only from a total loss of part of the cargo, and it is therefore correctly termed a partial loss on freight. This may arise either from the article of which the freight is insured being washed out of the package which contained it, or from its being lost in bulk by one of the perils insured against (*Stevens' Essay*, page 174); but, in terms of the memorandum at the foot of an ordinary policy of insurance, the loss must amount to three per

cent. on the total freight shipped, to constitute a claim on the underwriters.

AVERAGE-BOND or *Average-agreement.* A written agreement signed by the consignees or owners of a cargo, binding themselves to pay any proportion of Average that may justly arise against them in consequence of some accident with which the the ship has met.

It is particularly advisable for the master to obtain this security before he parts with the goods *to a consignee;* the real owner of them is liable without signing such a bond, but a consignee is not; and therefore, by the latter refusing to pay, the ship-owner might be left to seek recovery from the principal, residing abroad or at a distance *(Lorimer's Letters to a Young Master Mariner).*

AVERAGE-STATER. See *Adjustment.*

A-WASH. At the surface of the water. *Heave and a-wash* is an encouraging call given during the act of heaving, when the anchor-ring is just out of the water and the stock is seen to stir the surface.

A-WEATHER. See *A-lee.*

A-WEIGH. The same as *A-trip* when applied to an anchor.

AWNING. A canopy or covering of canvass over a ship's deck, or over a boat, as a protection from the sun and rain. In a ship, the edges of the awning are supported by iron stanchions fixed in the rail, and it is suspended from the middle by a *Crowfoot,* which is formed by a number of small lines rove through a circular piece of wood with holes in it, called the *Euphroe,* hung by a whip from the mast head.

In East India ships, *the awning* also signifies part of the poop deck which is continued forward beyond the bulk head of the cuddy *(Norie's Epitome).*

AXIS *of the Earth,* in astronomy, an imaginary line passing through the centre of the earth, round which axis it revolves once in twenty-four hours; the extremities of this line are termed the Poles, the one the North Pole and the other the South Pole *(Norie's Epitome).* Around this line, extended both ways to the sphere of the fixed stars, the

heavenly bodies appear (by the motion of the earth on its axis) to perform their diurnal revolutions *(Squire's Grammar of Astronomy)*.

AZIMUTH *of a Celestial Body*; an arc of the horizon contained between the azimuth or vertical circle passing through the centre of the body and the north or south point of the horizon.

AZIMUTH CIRCLES, called also *Azimuths*, or *Vertical Circles*, are great circles passing through the Zenith and Nadir, and consequently intersecting the horizon at right angles. That vertical circle which passes through the east and west points of the horizon is termed the *Prime Vertical*.

THE AZIMUTH COMPASS is an instrument similar to the steering compass, but of superior construction; it is adapted to observe the *magnetic* azimuths or amplitudes of the sun, in order to ascertain the variation of the compass, and is fitted with vertical sight vanes for the purpose of observing objects elevated above the horizon. *(Norie's Epitome*, and *Raper's Practice of Navigation and Nautical Astronomy.)*

BACK an ANCHOR. See the article *Anchor*.

BACK ASTERN, in rowing, means to reverse the action of the oars (or, as it is called, to *back the oars*) so that the boat may move astern. A *sailing vessel* is backed by means of the sails; a *steamer* by reversing the paddles or screw propeller, or in other words by *backing the engine*. See *Steamship*, and description of *Steam-engine*, Sect. 36.

BACK the SAILS. To throw them aback.

BACK and FILL. Alternately to back and fill a vessel's sails. This is practised when driving in a narrow tideway, in order to keep the ship in the channel without the operation of tacking; the vessel being thus forced alternately ahead and astern by the trimming of the sails.

BACK *of a piece of knee timber*. See *Belly*.

BACK-ROPES. See *Martingale*.

BACKSTAYS. Ropes extended from the topmast, topgallant mast, and royal mast heads, to the after part of each channel for the support of these masts. They are distin-

guished by the name of *Standing-Backstays.* (Plates III. and IV.)

Breast-Backstays are those set up with a tackle, and extending from the head of an upper mast, through an outrigger bolted on the side of the top, down to the channels before the standing backstays; they are used chiefly for topgallant and royal masts.

BACKSTAY-STOOLS. See *Stool.*

BALANCE-FRAME. See *Frames.*

BALANCE-REEF. See *Reef.*

BALCONY. See *Gallery.*

BALE *a Boat:* to throw water out of her.

BALK (*Baulk*).

BALLAST. Heavy materials, such as stones, pig-iron, sand, &c., placed in the bottom of a vessel's hold to lower the centre of gravity, and thereby to increase her stability, so that she may not be liable to cant over too much, or to be overturned, by the impulse of the wind and waves, as well as to present a greater lateral surface to the resistance of the water when sailing on a wind, and thereby check her from falling to leeward.

Unless stones, metal, or other such material cannot be obtained, it is not considered proper, nor perhaps warrantable, to take sand ballast, by which the pumps are apt to become choked, even when every precaution is used by clearing the limbers, by protection with matting and otherwise. *(Lorimer's Letters to a Young Master Mariner).*

See *Kentledge.*

BANDS. Strips of canvass sewed across a sail to strengthen it; such as *reef-bands,* which are put on in the way of the reef-points. See also *Rudder-Bands.*

BANK. An accumulation of sand or other soil, either elevated above the surface of the sea, or over which there is shoal water. On charts, banks are indicated by *dots,* and reefs by *crosses.* See also *Fog-Bank.*

BAR. A bank or shoal at the entrance of a river or harbour. See also *Capstan* and *Cross-Bars.*

BARE-POLES. A ship at sea is said to be *under bare*

poles, when she has no sail set; as, in scudding during a severe storm.

BARGE. A general name for boats of state or of pleasure. A large double-banked boat used by an admiral or captain in the Royal Navy. See *Boat*.

Also a flat-bottomed vessel of burden, used in loading or unloading ships, &c. In vessels of this description, when employed for the carriage of goods in a river, or through a canal, the mast, if needful, is made to work upon a hinge, so that it may be lowered in passing under bridges, and hoisted again by means of a tackle made fast to the stem or by the fore-stay.

BARK. A popular name for any small vessel. See also *Barque*.

BARNACLE or BARNICLE. A species of small shell-fish often found adhering to the surface of a vessel's bottom. These are not injurious to the plank, but tend to deaden the ship's way. They are found occasionally even on coppered vessels, particularly if the copper have been paid over with coarse oil, which, on drying, leaves a rough surface.

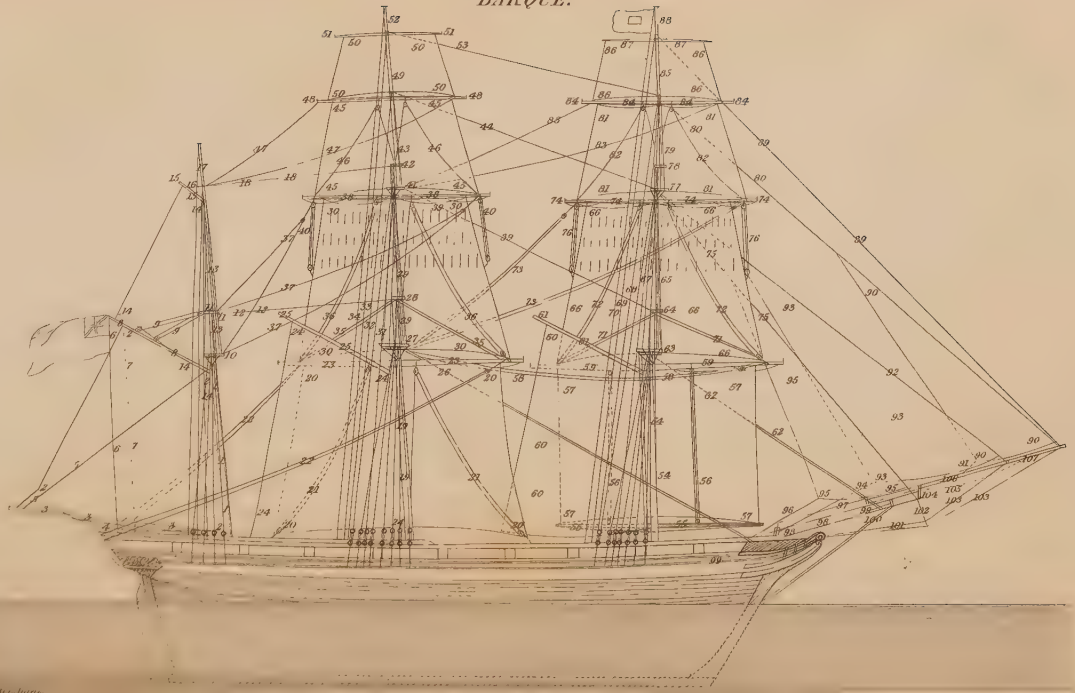
BAROMETER. A well-known philosophical instrument for measuring (by means of a column of mercury in a glass tube) the comparative weight or pressure of the atmosphere. Marine barometers are constructed in such a manner as to check the oscillations and vibrations of the mercury, which might be occasioned by the motion of the ship. With a view to that important object, they ought always to be hung by the arm which is prepared for this purpose, and not by the upper ring only.

The barometer is subject to slight daily variations, particularly towards noon and midnight; but if at any time the mercury fall *considerably* from its usual height, some material change may be expected to take place, and when it falls very low, (for instance, in our climate to 29 inches or below that mark), a gale is sure to follow.

This instrument is peculiarly useful in *high* latitudes, and even near the tropics. But within 9 or 10 degrees of the Equator, though storms of long duration are almost invari-

PLATE III.

BARQUE.



1 MIZEN MAST.
2 Spanker.
3 Spanker Boom.
4 Spanker Sheet and Block.
5 Spanker Boom Topping Lift.
6 Signal Halyards.
7 Spanker Vangs.
(There are also Vangs for the Main and Fore-Spencers, not laid down in Plate.)
8 Spanker Gaff.
9 Peak Halyards.
10 Mizen Cross-trees.
11 Mizen Cap.
12 Mizen Stay.
13 *Mizen Topmast.*
14 Gaff Topsail.
15 Gaff Topsail Gaff.
16 Gaff Topsail Halyards.
17 Mizen Topmast Pole.
18 Mizen Topmast Stay.
19 MAIN MAST.
20 Mainsail.
12 Main Clue Garnets.
22 Main Braces.
23 Main Yard.
24 Main Spencer.
25 Main Spencer Gaff.
26 Main Stay.
27 Main Top.
28 Main Cap.
29 *Main Topmast.*
30 Maintopsail.
31 Maintopmast Backstays.
32 Maintopgallant Backstay.
33 Main Royal Backstay.
34 Signal Halyards.
35 Main Lifts.
36 Maintopsail Cluelines.
37 Maintopsail Braces.
38 Maintopsail Yard.
39 Maintopmast Stay.
40 Maintopsail Reef-tackles.
41 Maintopmast Cross-trees.
42 Maintopmast Cap.
43 Maintopgallant Mast.
44 Maintopgallant Stay.
45 Maintopgallant Sail.
46 Maintopgallant Cluelines.
47 Maintopgallant Braces.
48 Maintopgallant Yard.
49 Main Royal Mast.
50 Main Royal.
51 Main Royal Yard.
52 Main Royal Pole.
53 Main Royal Stay.
54 FORE MAST.
55 Bentick Boom.
56 Fore Bentick Clue Garnets.
57 Fore Sail.
58 Fore Braces.
59 Fore Yard.
60 Fore Spencer.
61 Fore Spencer Gaff.
62 Fore Stay.
63 Fore Top.
64 Fore Cap.
65 *Fore Topmast.*
66 Fore Topsail.
67 Foretopmast Backstays.
68 Foretopgallant Backstay.
69 Fore Royal Backstay.
70 Signal Halyards.
71 Fore Lifts.
72 Foretopsail Cluelines.
73 Foretopsail Braces.
74 Foretopsail Yard.
75 Foretopmast Stay.
76 Foretopsail Reef-tackles.
77 Foretopmast Cross-trees.
78 Foretopmast Cap.
79 Foretopgallant Mast.
80 Foretopgallant Stay.
81 Foretopgallant Sail.
82 Foretopgallant Cluelines.
83 Foretopgallant Braces.
84 Foretopgallant Yard.
85 Fore Royal Mast.
86 Fore Royal.
87 Fore Royal Yard.
88 Fore Royal Pole.
89 Fore Royal Stay.
90 Flying Jib.
91 Flying Jib Sheet.
92 Jib Stay.
93 Jib.
94 JibSheet.
95 Foretopmast Staysail.
96 Foretopmast Staysail Sheet.
97 Ridge-ropes.
98 Bowsprit.
99 Bowsprit Shrouds.
100 Bobstay.
101 Martingale Back-ropes.
102 Martingale.
103 Martingale Stays.
104 Bowsprit Cap.
105 Footrope of Jib-Boom.
106 Jib-Boom.
107 Flying Jib-Boom.

NOTE.—The fore, main, and mizen masts of a SHIP are rigged in the same way as the fore and main masts of a *Barque*, but on a *ship's* cross-jack yard, which is the lowest yard on the mizen mast, no lower square sail is generally set. A BRIG is rigged in the same way as the fore and main masts of a *barque*, but the fore-and-aft sail called a *spencer*, which is set upon or abaft the main mast of a barque, in a *brig* or in a *snow*, gets the name of a *fore-and-aft mainsail*, or a *trysail*, respectively

BACKSTAYS.
31 Maintopmast Backstays.
32 Maintopgallant Backstay.
33 Main Royal Backstays.
67 Foretopmast Backstays.
68 Foretopgallant Backstay.
69 Fore Royal Backstay.
100 BOBSTAY.
BOOMS.
3 Spanker Boom.
55 Bentick Boom.
106 Jib-Boom.
107 Flying Jib-Boom.
98 BOWSPRIT.
104 BOWSPRIT CAP.
99 BOWSPRIT SHROUDS.
BRACES.
22 Main Braces.
37 Maintopsail Braces.
47 Maintopgallant Braces.
58 Fore Braces.
73 Foretopsail Braces.
83 Foretopgallant Braces.
CAPS.
11 Mizen Cap.
28 Main Cap.
42 Maintopmast Cap.
64 Fore Cap.
78 Foretopmast Cap.
CLUE GARNETS.
21 Main Clue Garnets.
56 Fore Bentick Clue Garnets.
CLUE LINES.
36 Maintopsail Clue Lines.
46 Maintopgallant Clue Lines.
72 Foretopsail Clue Lines.
82 Foretopgallant Clue Lines.
CROSS-TREES.
10 Mizen Cross-trees.
41 Maintopmast Cross-trees.
77 Foretopmast Cross-trees.
105 FOOTROPE OF JIB-BOOM.
GAFFS.
8 Spanker Gaff.
15 Gafftopsail Gaff.
25 Main Spencer Gaff.
61 Fore Spencer Gaff.
HALYARDS.
6, 34, 70 } Signal Halyards of Mizen, Main, and Fore Masts.
9 Peak Halyards (Mizen).
16 Gaff Topsail Gaff Halyards.
LIFTS.
5 Topping Lift of Spanker Boom.
35 Main Lifts.
71 Fore Lifts.
102 MARTINGALE.
101 MARTINGALE BACK ROPES.
103 MARTINGALE STAYS.
MASTS.
1 *Mizenmast.*
13 Mizentopmast.
19 *Mainmast.*
29 Maintopmast.
43 Maintopgallant Mast.
49 Main Royal Mast.
54 *Foremast.*
65 Foretopmast.
79 Foretopgallant Mast.
85 Fore Royal Mast.
POLES.
17 Mizentopmast Pole.
52 Main Royal Pole.
88 Fore Royal Pole.
REEF TACKLES.
40 Maintopsail Reef-tackles.
76 Foretopsail Reef-tackles.
97 RIDGE-ROPES.
SAILS.
2 *Spanker* or *Driver.*
14 Gaff Topsail.
20 *Mainsail.*
24 Main Spencer.
30 Main Topsail.
45 Maintopgallant Sail.
50 Main Royal.
57 *Foresail.*
60 Fore Spencer.
66 Foretopsail.
81 Foretopgallant Sail.
86 Fore Royal.
90 Flying Jib.
93 Jib.
95 Foretopmast Staysail.
SHEETS.
4 Spanker Sheet (and block.)
91 Flying Jib Sheet.
94 Jib Sheet.
96 Foretopmast Staysail Sheet.
STAYS.
12 Mizen Stay.
18 Mizentopmast Stay.
26 Main Stay.
39 Maintopmast Stay.
44 Maintopgallant Stay.
53 Main Royal Stay.
62 Forestay
75 Foretopmast Stay.
80 Foretopgallant Stay.
89 Fore Royal Stay.
92 Jib Stay.
TOPPING LIFT. See *Lifts.*
TOPS.
27 Main Top.
63 Fore Top.
7 VANGS OF SPANKER GAFF.
YARDS.
23 Main Yard.
38 Maintopsail Yard.
48 Maintopgallant Yard.
51 Main Royal Yard.
59 Fore Yard.
74 Foretopsail Yard.
84 Foretopgallant Yard.
87 Fore Royal Yard.

ably prognosticated by the barometer, yet whirlwinds and squalls of a few hours' continuance are said to be sometimes experienced without any fall of the mercury.

In the evidence given some time ago by Captain Fitzroy, before the Committee of the House of Commons on Shipwrecks, he attributes the loss of many vessels to the neglect of the use of this instrument, whereby they have either closed the land when at sea, or put to sea at improper times, and so been overtaken by bad weather coming on suddenly. Every vessel, he says, ought to have either a barometer or a *sympiesometer*, which is an efficient substitute for it.

Important information on this subject is contained in the Introduction to Mr Horsburgh's *India Directory*, (from which some of the above particulars are extracted)—in Lieut. Jenning's "*Hints on Sea Risks*"—and in Mrs Taylor's "*Diurnal Register for the Barometer, Sympiesometer, and Thermometer.*"

BARQUE or BARK. A three-masted vessel, having her fore and main masts rigged like those of a ship, but her mizen mast rigged like a schooner's main mast.

BARRATRY. Any act of fraud, or (in some instances) of misconduct on the part of the master or mariners, to the prejudice of the owners of a vessel, *and without their consent or privity*. Thus, if the master or mariners sink or desert the ship, or commit smuggling on his or their own account—if he sail out of port without paying port dues, in consequence whereof the goods are forfeited (*Earl and others v. Rowcroft*, 8 *East Rep.* 126)—if he deviate from the voyage on a private adventure of his own—if he enter into an enemy's settlement to trade, and the ship is seized and confiscated, though it may be done with a view to promote the owners' interest, but contrary to their instructions, (*Moss* v. *Byrom*, 6 *T. R.* 379)—or, if he disregard an embargo, or a blockade, this constitutes Barratry.

It is manifest, that where the master is sole owner of the ship, no act of his can be considered as barratry; but it would seem that one part-owner, being master, can commit barratry against another.

The underwriters are responsible for the consequences of any barratrous act, whether the loss thereby occasioned should happen during the commission of the act of barratry, or at a subsequent period of the voyage; but it must happen in the course of the voyage insured, or within the time that the policy is in force (*Lockyar* v. *Offley*, 1 *T. R.* 252). *Park, Marshall, Tenterden.*

BARREL-BULK, in shipping, a measure of capacity for freight, equal to five cubic feet. Eight barrel bulk are equal to one ton measurement. (*Waterston's Cyclopædia of Commerce*).

BARRICADE. A wooden fence at any part of a vessel, formed by rails and stanchions.

BASIN. The same as a *Wet Dock*. The term *Basin* is also applied to a portion of a tide-harbour having a narrow entrance, and forming an inner harbour sheltered and commodious for shipping.

BATTENS. Long narrow slips of wood nailed to the coamings of a vessel's hatches in order to secure the tarpaulins which are placed over the hatches when required. This is called *battening down the hatches*. Bands of iron are sometimes used for the purpose instead of wooden battens, especially in coasters.

Battens (sometimes called in cant phrase *Scotchmen*, but properly CHAFING-BOARDS) are also seized upon rigging to prevent its being chafed. Battens are likewise nailed for this purpose on the after side of the yards.

In shipbuilding, battens are used for applying on the side of the vessel in order to determine the sheer, as well as to fair the ship; and for drawing lines by in the moulding loft. —See *Deals*.

BAULK, or BALK, in shipbuilding, a piece of plank nailed across each of the frames to keep them at their proper breadth till the vessel is planked outside. They also get the name of *Cross-Spales* or *Cross-Pawls*. See *Bilgeways* and *Spaling*.

BAY. A kind of small gulf not running very deep into the land.

BAYS, *in a ship of war,* the starboard and larboard (or port) sides between decks before the bitts *(Darcy Lever).*

SICK-BAY. See that article.

BEACH. The sea shore—the strand.

Beaching is a term used to denote the act of intentionally running a vessel ashore in order to preserve her from sinking after having sprung a leak, or when she is otherwise placed in circumstances of inevitable danger (See *Stranding*). It is also applied to the act of running a vessel up on the beach for the purpose of loading her, &c., at a place where there is no other accommodation. See *Careen.*

BEACON. Any mark or sign erected on the coast, or over rocks or shoals, for the safe guidance of vessels.

BEACONAGE. A payment levied for the use and maintaining of beacons.

BEAMS, in shipbuilding, strong pieces of timber resting on the clamps or shelf-pieces, and extending from the timbers on one side to those on the other side of the vessel; they are secured to the timbers by means of knees, and bind the ship together, besides acting as the support for her decks (Plate II. fig. 6).

A vessel is said to be *on her beam-ends,* when heeled over so that her beams are vertical or nearly so.

On the Beam, or *A-beam.* See *Bearing.*

BREAK-BEAMS. Beams introduced at the break of a deck.

BREAST-BEAMS. Those beams at the fore part of the quarter deck, and after part of the forecastle, in a vessel which has a poop and a top-gallant forecastle.

HALF-BEAMS, or *Fork-Beams.* Short beams introduced to support the deck where there is no framing, as in those parts where the beams are kept asunder by hatchways.

HOLD-BEAMS. The lowest range of beams in a merchant vessel. Where there is an orlop-deck, as in the case in large ships of war, these beams support that deck, and hence get the name of the ORLOP-BEAMS (Plate II. fig. 6).

PADDLE-BEAMS. See *Paddle-Wheels.*

BEAM-FILLINGS. See *Filling.*

BEAR. An object *bears* so and so, when it is in such a

direction from the person looking. With reference to the wind it is said to bear N. or N.E. &c., according to the quarter whence it blows. See *Bearing.*

BEAR A HAND. To make haste.

BEAR AWAY. To make a vessel's head recede from the wind when she is sailing close-hauled, or with a side wind: in either case, this is done by putting the helm up.

BEAR DOWN *upon a vessel:* to approach her from windward.

BEAR *in with* and *off from* the land, imply respectively to steer a vessel *towards* and *from* the land.

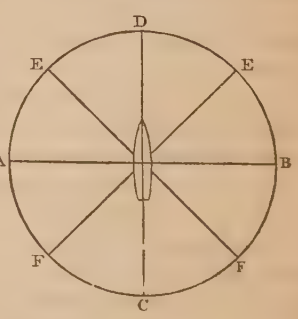
BEAR UP *the helm:* to put it a-weather, in order to make a vessel's head recede from the wind.

BEARDING, in shipbuilding, diminishing the edge or surface of a piece of timber or plank, &c., from a given line. *(Shipwright's Vade Mecum).*

BEARDING-LINE. A curved line made by bearding or reducing the dead-wood to the form of the ship's body. The lower points of the timbers come down to this line, which is often called the *stepping-line.*

BEARING. The situation of one object from another with reference to the points of the compass.

Also, the situation or direction of any object, or of the wind, estimated from some part of the ship. These bearings are either *On the beam,* as the lines A and B: *Before the beam,* as the arcs A D and D B: *Abaft the beam,* as the arcs A C and C B: *On the lee or weather bow,* as the lines E E: *On the lee or weather quarter,* as the lines F F: *A-head,* as the line D: or *Astern,* as the line C *(Seamanship both in Theory and Practice).*



BEARINGS *of a vessel;* the widest part of her below the plankshеer; that part of her which is on the water-line when she sits upright with a full cargo on board.

BEATING *to windward.* Sailing against the direction of the wind by means of alternate tacks.

Working to windward and *Turning to windward* are terms synonymous therewith.

BECALM. A vessel is becalmed, when there is not a breath of wind to fill her sails. Any object becalms a vessel, or one sail becalms another, when it prevents the wind from reaching it.

BECKET. A piece of rope, sometimes with a knot at one end and an eye in the other, sometimes with its two ends spliced together, used for confining pump-gear, oars, or spars together, and for other purposes.

A piece of wood in the form of a cleat seized on a vessel's fore or main rigging for the sheets and tacks to lie in (while they are not required) in order to avoid chafing.

A ring of rope or iron fixed to the bottom of a block for the standing end of the fall to be made fast to.

BED. A flat thick piece of wood, two of which are lodged under the quarters of any cask that is stowed in a vessel's hold, in order to keep it *bilge-free.* Casks are steadied upon the beds by means of wedges called *Quoins.* See *Bilge of a cask.*

Beds for Guns are pieces of wood for the breech of the gun to rest on. *Beds for Mortars* or *Bomb Beds* are solid frames of timber whereon the mortars in a bomb-vessel are supported.

BEES. Pieces of hard wood bolted to the outer end of a vessel's bowsprit to reeve the foretopmast stays through.

BEETLE. See *Reeming.*

BELAY. To make fast any running rope by turns round a pin or coil without hitching or seizing: chiefly applicable to running rigging.

Belaying Pins are wooden or iron pins, fixed in different parts of a vessel, for belaying ropes to.

BELFRY. An ornamental frame fixed on the top of the pawl-bitt or elsewhere, in which the ship's bell is hung.

BELLS. See *Watch.*

BELLY *of a sail,* when inflated by the wind, or *of a curv-*

ed timber, is the inside of its curve. The outside of a curved piece of timber is called the *back*.

BEND. To make fast. To fasten two ropes together.

To bend the cable, means to make it fast to the anchor ring; a chain cable is secured to the ring by means of a shackle. See *Cable-Bends*.

To bend the sails, is to extend and fasten them to their proper yards or stays.

BEND. A species of knot by which two ropes are fastened together. See also *Cable-Bends*. The various kinds of bends are somewhat fully explained and illustrated in *Dana's Seaman's Manual*.

BENDS *in shipbuilding*. See *Wales*.

BENTICK-BOOM. See *Boom*.

BERTH. The place which a vessel occupies alongside of a quay or elsewhere.

Also, a small room in a vessel set apart for the use of any officer, seaman, or passenger. Their beds, or the places where hammocks are slung, are likewise called *berths*.

To berth a ship's company, means to give each man the allotted space in which to sling his hammock.

To give the land (or any object) *a wide berth*, is to keep at a due distance from it.

BERTH AND SPACE. See *Timber and Room*.

BERTHING. The term now frequently, perhaps most generally, used by seamen to denote the bulwark of a merchant ship. In naval architecture, it denotes the planking outside above the sheer-strake, and is called the berthing *of the quarter-deck*, *of the poop*, or *of the forecastle*, as the case may be. It is also applied to denote the close boarding between the head-rails, in which case it is called the *berthing of the head*: this is frequently termed by seamen the *head-boards*.

BETWEEN-DECKS, or TWIXT-DECKS. The space between any two decks of a vessel.

BEVELLED. Not square: formed with an acute or obtuse angle. The term is derived from an instrument called a *bevel*, by which such angles are taken.

Hence, *the bevelling* of a timber implies the angle contained between two of its adjacent sides: if an acute angle, it is termed an *under bevelling* (or *bevel*), and if an obtuse angle, a *standing bevel*. We also speak of a timber having a *square bevel*, that is, having its adjacent sides at right angles to each other; but this is an incorrect application of the term.

BIGHT. A bend in the shore forming a small bay or inlet.

BIGHT *of a rope*: its middle part, or some fold of it between the two ends. When any such parts of a vessel's rigging, as of the braces of yards, are slack, the braces are said to *hang in bights*.

BILBOES. Iron shackles to secure the feet of prisoners or offenders.

BILGE, in shipbuilding, that part of a vessel's bottom which begins to round upwards, at the point where the floors and second futtocks unite, and whereon the ship would rest if laid aground. It is strengthened outside and inside by thick planks, termed the bilge planks, a security which, along with extra bolting, is the more required, as the shiftings at this part are generally shorter than elsewhere.

A ship is said to be bilged, when any part of her bottom or bilge is driven in by violence. When such an injury occurs to the upper portion of her hull, she is said *to be stove*.

The bilge of a cask is its middle part, which has the greatest diameter. See *Chime* and *Contline*. A cask, when stowed in a ship, is said to be *bilge free*, if properly set upon beds so as to prevent its bilge, which is the weakest part, from resting on any thing.

BILGE-COAD. See *Bilge-keels* and *Bilge-ways*.

BILGE-FREE. See *Bilge of a Cask*.

BILGE-KEELS, also called *Bilge-Pieces* or *Bilge-Coads*, are pieces of timber fayed on the bottom of a vessel edgeways, which, by their resistance to the water, serve to prevent the ship from rolling heavily, as well as from drifting to leeward. They should be wrought on parallel to the main keel

and in such a position, that when the ship is sailing close-hauled, the one on the lee-side may be nearly vertical. In *iron vessels,* angle iron plates are in like manner used for the same purpose.

In a sharp bottomed vessel such pieces are sometimes put upon the bilge for her to rest upon when aground, in order to prevent her taking too great a list.

BILGE-KEELSONS. See *Keelson.*

BILGE-PLANKS. Thick planks which run round a vessel's bilge in a fore and aft direction, both inside and outside (Plate II. fig. 6). See the article *Ceiling.*

BILGE-PUMPS. See *Pump.*

BILGE-WATER. Water which, by reason of the flatness of a vessel's bottom, lies on her floor and cannot go to the well of the pumps. Not being drawn off, it acquires an offensive smell. This is most apt to accumulate in very tight vessels. When the ship is listed over, it may be removed by means of the bilge pumps. In some vessels a pipe is inserted through the side with a cock, which gets the name of a *sweetening cock,* fitted to its inner end, for admitting water to mix with the bilge-water.

BILGE-WAYS, or *Launching-Ways,* in shipbuilding, a square bed of timber placed under a vessel's bilge to support her while launching. The planks fitted under the bottom of the ship to descend with her upon the bilge-ways, are termed *sliding planks, sliding baulks,* or *bilge coads.*

BILL, or PEA. The extremity of the arm of an anchor, where it is tapered nearly to a point.

BILL-BOARDS, or *Anchor-Lining.* Pieces of board or plank fixed between the projecting planks of the bow (sometimes having iron plates, called *Bill-board Plates,* nailed to them)—and likewise pieces attached to the bulwarks—to guide the bill of the anchor past these projecting planks.

BILL OF HEALTH. See *Quarantine.*

BILL OF LADING. A document whereby the master of a vessel acknowledges the receipt of goods shipped on board of it, and binds himself ("dangers and accidents of the seas, fire, enemies, &c. excepted") to deliver them in like

good order and condition to the party to whom they are addressed, upon payment of the stipulated freight.

In attaching his name thereto, which he ought not to do until the goods are actually on board, the master should be careful to notice in the margin any packages of the weight or contents, &c., whereof he is ignorant; and if a receipt have been previously given for the goods, the bill of lading should be granted to the holder of it, and the receipt be cancelled. *(Lorimer's Letters to a Young Master Mariner).*

A Bill of Lading may be transferred by indorsement, which may be made blank without naming the person to whom delivery is to be made, and the master is bound to deliver the goods to any holder of the bill who has required legal right to it. See *Stoppage in Transitu.*

Bills of Lading and copies thereof are required by our laws to be written on a 6d. stamp; both that which is retained by the master and those which are delivered or transmitted to the shippers and consignees or others.

BILL OF SIGHT, or Bill of View. A warrant for a Custom-house officer to examine goods which upon importation cannot be correctly described by the owner or consignee, for the purpose of ascertaining the real contents, and so enabling the merchant to make out proper entries.

BILL OF STORE. A Custom-house document permitting goods which had been shipped for foreign parts but not sold there, to be re-imported duty free, upon a certificate by the proprietor or exporter that they had not found a market abroad.

BILLET-HEAD, or Bollard. A round piece of wood fixed in the bow or stern of a whale fishing boat, about which the line is veered when a whale sets off at full speed after being harpooned. See also *Head.*

BINDINGS, in shipbuilding, a general name for the beams, knees, clamps, shelf-pieces, keelson, water-ways, breast-hooks, transoms, wales, and other principal connecting parts of a vessel.

Binding-Strakes. The principal strakes of plank in a

vessel, especially the sheer-strake and wales, which are bolted to the knees and shelf-pieces.

BINNACLE. A turret shaped case or box on the deck of a vessel near the helm, containing the compasses, by the aid of which she is steered. It is commonly fitted with two compasses, having a light placed between them for night service. Reflectors fitted on each side of the binnacle, at a proper angle to throw the light upon the cards, assist greatly in keeping them well illumined, even when the ship labours. This plan is said to have been adopted and found advantageous, by Captain Cox of H. M. revenue cutter "Lapwing." There is a new kind of *Binnacle Lamp* (invented by Mrs Janet Taylor, 104 Minories, London) having a parabolical reflector placed above it, which throws the light brilliantly over the compass card; this lamp is said to burn with a steady light, and to save about two-thirds of the oil usually consumed.

BINS. A sort of large chests, or erections ("generally made of rabbeted deal, with lids on the top"), for containing a vessel's stores.

BITE. An anchor, when dropped, is said to *bite* if it take hold of the ground.

BITTACLE, properly *Binnacle.*

BITTS, or Bits. Strong upright pieces of timber let down through a vessel's deck and bolted securely to the beams: as, the *Windlass-Bitts* and *Winch-Bitts* which respectively support the windlass and winch near their ends, and the *Riding-Bitts* to which, when at anchor, the cable is made fast in a vessel that weighs its anchor by a capstan. See *Cross-Piece* and *Topsail-sheet-Bitts.*

To Bitt, is to place the bight of a cable or any rope over the bitts.

Gallows-Bitt. See *Gallows.*

Pawl-Bitt. A strong piece of timber placed vertically at the back of the windlass for its security, and on which the pawl-plate of the windlass is fitted. Its lower end rests on the keelson or on the keelson-rider.

BITTER-END *of a cable or warp when run out from a vessel,* means the extreme end of it within board. Hence the chain or rope is said to be paid out *to the bitter end,* when you can let no more go.

BLACKING DOWN. A term commonly applied to the tarring of rigging, or to the operation of blacking a ship's bottom with tar, &c.

BLACKSTRAKES. See *Strake.*

BLADE. See descriptions of *Anchor* and *Oar.*

BLAIR. A mixture of hair and Archangel tar, made into a kind of paste, used for tightening the seams of boats.

BLOCK. A piece of wood with one or more *sheaves* or wheels in it, through which a rope may be rove to obtain a convenient or increased purchase. There are blocks made of iron for reeving chains through. Blocks are termed *single double,* or *treble,* &c., according to the number of sheaves which they contain. Wooden blocks are either *built* or *morticed.* A BUILT BLOCK consists of four parts: the *shell,* or outer case wherein the sheave traverses; the *sheave,* on which the rope runs; the *pin,* on which, as an axle, the sheave revolves; and the *strop* (or strap), either of rope or iron, which encircles the whole. The space in the shell where the sheave revolves is termed the *jaw.* The sheave is generally strengthened by letting in at the centre a circular piece of iron or brass called a *bush.* A MORTICED BLOCK is formed of a single block of wood morticed out to contain one or more sheaves.

Blocks also signify short ends of logs of timber, piled upon each other, to lay the keel of a vessel upon while building, or to place her upon for repairs.

CANT-BLOCKS. A name given to large purchase blocks, used in ships at the Davis' Strait's fishing, for canting the whales during the process of flensing.

CAT-BLOCK. See *Cathead.*

CLUMP-BLOCKS. A name given to any blocks that are made thicker or stronger than ordinary blocks.

FIDDLE-BLOCKS, or LONG-TACKLE BLOCKS, have two

sheaves of different sizes placed one above the other. These are used chiefly for the runner-and-tackles of sloops.

Jewel-Blocks are small blocks suspended from the extremities of any yard-arm to lead the studding-sail halyards through.

Leading-Blocks. A general name for those blocks which are used for guiding the direction of any purchase; they are generally portable, and may be distinguished into three kinds:—

Hook-Blocks, which are iron-stropped, with a hook at one end.

Snatch-Blocks (or *Notch-Blocks*) which are single blocks with a notch cut in one cheek, to receive the *bight* of a rope or fall, so as to save the trouble of reeving and unreeving the whole. These are used sometimes for leading a rope fair to the winch or windlass, and for various similar purposes.

Tail-Blocks, which are single blocks, rope stropped, having an end or "tail" of the rope left by which they may be lashed to the rigging, or made fast at any other part where they happen to be required.

Purchase-Blocks. See *Purchase.*

Top-Block. See *Mast Rope.*

Bowline-Blocks, Brace, Brace-pendant, Brail, Clue-garnet, Clue-line, Fore-sheet, Girt-line, Halyard, Jear, Leech-line, Lift, Main-sheet, Main-tack, Peak-halyard, Reef-tackle, Stay-tackle, Throat-halyard, Topsail-sheet, and *Tye blocks,* &c., are all named respectively after the ropes or chains which are rove through them.

See *Bull's Eye, Clamp, and Deadeye,* which are each a species of block; and also the article *Plumber-Block.*

BLOCK and BLOCK. See *Chock-a-block.*

BLOCKADE. *To blockade a seaport,* is to station cruisers before it, in order to prevent any communication therewith by sea. *To raise a blockade,* is to put an end to it.

BLOW-OFF PIPE *(and cocks),* and blowing-off. See description of *Steam Engine,* sect. 45.

BLOW-THROUGH-VALVE. See description of *Steam Engine,* sect. 12.

BLUE-PETER. A flag having a blue ground with a white square in the middle. It is the signal for sailing.

BLUFF. Broad or full. Thus, a ship is *bluff-bowed* when her bows are made very full and flat. *Lean* is the reverse term.

BLUFF. A high abrupt projecting point of land.

BOARD. The stretch which a vessel makes on each tack in beating to windward. The ship is said *to make a good board,* when on either tack she sails well up to the line of her desired course—*a long board,* when she stands long on one tack—*a short board,* when she is put about soon—*a stern board,* when, on either tack, she fetches sternway instead of gaining ground.

To board or *to haul aboard* the *fore and main tacks,* means to haul them forward, and down to the chestrees on the weather side of a vessel, when sailing on a wind See *Tack.*

BOARD *a ship.* To enter an enemy's or pirate's vessel in order forcibly to take possession of her The men appointed either to make or to repel such an attack are called *boarders;* in the former case, they carry each a cutlass, a tomahawk, and two pistols; in the latter, they are armed with *boarding-pikes.*

See also *By the Board.*

BOARDERS. See *preceding article.*

BOARDING-NETTINGS. See *Nettings.*

BOARDING-PIKE. A weapon used in defending a ship against being boarded.

BOAT. A small open vessel adapted either for rowing or sailing. See *Oar, Stern-sheets, Thwart, &c.*

The boats taken to sea in a *ship of war* are as follows:—*The launch* or *long boat,* which is the largest on board, and is built full, flat, and high, so as to carry a great weight. *The barge,* next in size, of a slighter frame, rowed with ten or twelve oars, and intended for carrying commanding officers to and from the ship. *The pinnace,* of a similar form, but somewhat smaller than the barge, pulling six or eight oars; it is for the accommodation of the lieutenants and subordinate officers, &c., or is used instead of the barge for the smaller classes of

ships. *The yawl,* a boat of the same description as the pinnace, but somewhat smaller. (The above mentioned boats are all carvel built.) *Cutters,* which are clinker built, and are shorter and broader in proportion to their length than the long-boat; they are used for the conveyance of stores, &c. *The jolly-boat,* similar to that of a merchant vessel. *The gig,* a long narrow boat, also clinker built, adapted for rowing expeditiously, and also for sailing; it usually belongs to the captain.

The boats belonging to a *merchant vessel* are: *The launch* or *long-boat,* already described. *The skiff,* next in size: used for towing, running out a kedge, &c. *The jolly-boat* or *yawl,* the third in size: kept for shore purposes and other light work. It is very commonly called the *stern-boat,* if hung to davits over the ship's stern. *The quarter-boat,* which is so called from being hung to davits over the ship's quarter: it is longer than the jolly-boat. Some vessels are provided with only one quarter-boat; others have a boat over each quarter. *The captain's gig* frequently forms one of the quarter-boats. It may here be remarked that, under policies of marine insurance, the loss of boats lashed to ring-bolts on deck, or to the quarters, is allowed, but not so if hung over the ship's stern *(Stevens's Essay on Average).* See *Barge, Coble, Fly-boat, Punt, Skiff, Wherry, and Yawl.*

BOAT-HOOK. A well known instrument, consisting of a pole with its end fitted into an iron socket, which has two prongs formed upon it, the one straight and the other hooked. This is used in a boat, or in the rafting of timber, for pushing off from and holding on by any thing.

BOAT'S-GRIPES. See *Gripes.*

BOAT-SKIDS. See *Skids.*

BOATSWAIN. An officer who has charge of a ship's cordage, rigging, anchors, &c.; and calls (or pipes) the crew to their different duties.

BOBSTAY. A chain (formerly a rope) used to confine a vessel's bowsprit down towards the stem or cutwater, counteracting the upward strain of the stays. The upper end of the bobstay is attached to the bowsprit by a hoop.

and the lower end to the stem, by means of iron plates called the *bobstay plates* (Plates III. and IV).

BODY-PLAN and BODIES. See *Shipbuilding.*

BOILER *of a Marine Engine.* See description of *Steam Engine,* sect. 37, &c.

BOLD. A bold *shore* is one which deepens very rapidly.

BOLLARD. See *Billet-Head.*

BOLSTERS. Pieces of soft wood clothed with tarred canvass, placed on the trestle-trees for the eyes of the rigging to rest upon. See also *Hawse Bolsters.*

BOLTS. Cylindrical bars of iron or copper, which are used to fasten pieces of timber, &c. together: *square* bolts, also, are often used in shipbuilding to fasten the frames together, for their better security while being laid on the keel.

Workmen have sometimes a custom of dipping the ends of bolts into tar, in order to make them drive more freely: as tar is injurious to the bolts, oil should rather be used for this purpose.

Barb-Bolts. The same as *Rag-pointed Bolts.*

Channel-Bolts, or *Chain-Bolts.* See *Chain-Plates.*

Clinch-Bolt. A bolt that is clinched by means of a ring, or an iron plate, at its point.

Drift-Bolts, are commonly made of steel; they are used for driving out other bolts.

Dump-Bolt. A short bolt driven into the plank and timber, as a partial security, previous to the through fastenings being put in. The *butt ends* of the outside planking should have at least one through bolt in each.

Eye-Bolts, are bolts which have an *eye* or opening in one end. They are fixed in various parts of a vessel's hull for hooking tackles and fastening ropes to.

Rag-Pointed Bolts, *Rag-Bolts,* or *Barb-Bolts,* are such as have their points jagged or barbed, to make them hold the more securely: these are used chiefly where common bolts could not be clinched.

Ring-Bolts have an iron ring of about three, four, or five inches in diameter, passing through an eye or opening in one end of the bolt. In shipbuilding, they are used with the

wrain-staff in the ring, for setting to the planks. A few ring-bolts are fixed in the ship's deck, or in the stanchions, for lashing the boats, &c.

Saucer-head Bolts, are bolts with very flat heads.

Throat-Bolts. See *Throat.*

BOLT-ROPES. Ropes sewed round the edges of a sail. The bolt-rope along each of its sides is called the *leach-rope;* that on the upper edge, the *head-rope;* and that on the lower edge, the *foot-rope.*

BOMB-BEDS. See *Bed.*

BOMB-VESSEL. A ship of war fitted for firing shells from mortars. In our navy, steam-ships are now sometimes employed in this way as being peculiarly suitable for the purpose. See *Ketch.*

BONNET. An additional piece of canvass made to lace on to the foot of a sail.

BOOM. A spar used to extend the foot of a fore and aft sail, or of a studding-sail. See *Swinging-boom. The Bentick-boom* is that which stretches the foot of the foresail in a square-rigged vessel. Other booms, such as the *Driver-boom* (or *Spanker-boom*), the *Jib-boom, Studding-sail booms, &c.*, are named respectively after the sails for which they are used. *The Main-boom* is that which stretches the foot of the mainsail in a fore and aft rigged vessel. (Plates III *and* IV).

Boom is also the name for a strong beam stretched across the mouth of a river, or the entrance of a harbour, in order to secure it against the approach of an enemy. A cable is sometimes used for this purpose. See also *Guess-warp-boom.*

Boom-Irons. Iron rings on a vessel's yards, through which the studding-sail booms traverse.

BOOMS. A space in a vessel's waist, set apart for the boats and spare spars.

BOTH-SHEETS-AFT, expressed of a square-rigged vessel, implies that the yards are squared, and the ship is running before the wind.

BOTTOM *of a Ship*: that part which is below the wales.

BOTTOM-PLANK. See *Strake.*

BOTTOMRY. The Contract of Bottomry, which is always in writing, sometimes in the form of a Bill, but most commonly in the form of a Bond, is one whereby a ship is pledged in security of money advanced for the purposes of her voyage; a high rate of interest, termed *Maritime Interest,* or *Bottomry Premium,* being charged, under the stipulation that if the ship be lost, the lender shall lose his whole money, including this premium, but that, if she reach her intended port in safety, the ship, as well as the person of the borrower, shall be liable for the money lent, and for the maritime interest thereon.

At the place of the shipowner's residence (or at any port in the United Kingdom, if the vessel be a British ship) the master has no power to borrow money on bottomry without their consent, nor would the insurers (if the vessel were "under average") be in any case made liable for the expense of such a step; but if at any port abroad, where timely communication cannot be had with the owners, money be required in order to repair or victual the ship, or to meet any expenses absolutely necessary for the despatch of the vessel upon her voyage, he may, if he *cannot* obtain it on personal credit, borrow money in this way. (*See the cases of the Gratitudine* 2 *Rob. A. R.* 240, 272, *and The Lochiel,* 3 *Rob.* 34.) The lender is bound to exercise all reasonable diligence in ascertaining that the supplies are necessary to enable the ship to complete her voyage, and that they cannot be procured on personal credit, (*Soares* v. *Rahn,* 3 *E. F. Moore*). "What is necessary," is understood to mean all that is fit and proper for the service wherein the vessel is engaged, and which the owner of the ship, if a prudent man, would have ordered if present; a private debt of the captain is held not to be within the meaning of this enquiry, though it might prevent his returning with the ship; nor are extra disbursements for liquor consumed by passengers; but payment of one bottomry bond is a good consideration for a new bond. (See *Dobson* v. *Lyall,* 8 *Jur.* 969. *The Alexander,* 1 *Rob.* 346.)

Wherever the master may pledge the ship, he may add the security of the freight, and, if necessary, he may likewise pledge the cargo; all of which securities are accordingly sometimes included in a bottomry bond over the ship, cargo, and freight.

Sometimes a bottomry bond is taken as a security to be enforced only in case of the draft on the shipowner being dishonoured, with the understanding, that if the draft be duly accepted, no bottomry premium shall be exacted, but merely the cost of insuring the disbursements for which the bond was granted. If, however, the advances have been originally made on the security of such bills drawn by the master on the owner, or otherwise on personal credit, a bottomry bond subsequently taken would be null. A bond procured by compulsion from the master is void.

If a bottomry bond over ship, cargo, and freight have been executed, and the principal sum and maritime interest be not paid within the stipulated time, proceedings may be taken to attach the freight, and for the sale of the ship; and, should these be insufficient, then (in default of the owner or consigner of the goods paying the deficiency) a sale of the cargo under warrant of the Admiralty Court is resorted to. (*See the case of the Lord Cochrane*, 8 *Jurist* 714, *wherein the general principles of law applicable to bottomry transactions are laid down at some length*).

If several bonds have been executed at successive periods of a voyage, and the value of the property pledged in security be not sufficient to discharge them all, the latest in date is entitled to be first satisfied (*Park*, p. 882).

It appears to be the general rule of this country that the Lender is not entitled to the benefit of salvage, nor liable to contribute towards any general average claim. (*Park*, p. 898.)

The Bottomry Premium or *Maritime Interest*, as already explained, is the consideration for which the lender takes the risk. If the vessel arrive at her port of destination, this premium is borne, in shares proportionate to the respective amounts advanced, by all who would, in case, of loss have

been benefitted by the contract of bottomry; that is to say, by all those who are liable for any part of the advances so made, whether the insurers or owners of the ship, freight, or cargo; because, if the vessel had been lost, they would be relieved of their liability for such advances as well as for the bottomry premium, the loss whereof would fall upon the lender.

Where the risk is not run at all, the lender will not be entitled to the extraordinary interest on the bond.

The lender may insure the amount disbursed by him, but he is not at liberty to charge the borrower with the premium of such insurance, over and above maritime interest. Under a policy of insurance on the amount of a bottomry bond, the insured cannot recover unless there has been an actual and total destruction of the ship. (*Thomson* v. *Roy*, *Exch. Assur. Co.*, 1 *M. and S.* 30. *Park*, p. 898). "This seems to imply," says Mr Richards, in discussing this subject, "that a *constructive* total loss cannot be admitted under an insurance on a bottomry bond; but if the ship be wrecked and rendered absolutely irreparable, and her materials are sold piecemeal, it would surely be too much to suppose that such a loss is not contemplated by a policy on bottomry. The same state of circumstances which will absolve the borrower from his obligation to the lender, will entitle the lender to recover on his policy; there appears, therefore to be no hardship on the lender, as the law gives him his right of recovery from one or the other. But it might and does often happen that a ship is not worth repairing on account of the excessive cost of doing so, and that the owner is consequently entitled to recover from the underwriter as for a constructive total loss, but this would not make a loss under a policy on bottomry. The owner of the ship would in such a case be liable to the holder of the bond for the full amount; he may be incapable of paying it, and loss may thus arise to the bond-holder; but the law would deem such to be a loss from the insolvency of the owner, not from perils of the sea, and therefore not within the risk of a policy of insurance. I have seen policies on bottomry with a special clause 'to pay a total loss if the ship do not arrive,' but as" (under circum-

stances similar to the above,) "the bond holder would also have his right of recovery against the owner, the underwriters of course would be entitled to credit for anything he might so recover."

BOUND. Destined. *Outward-bound,* is expressed of a vessel destined for a foreign port. *Homeward-bound,* of one returning to the country to which she belongs. See also *Ice-bound* and *Wind-bound.*

BOW. The fore end of a ship or of a boat. We speak of the starboard and larboard bows, the weather and lee bows.

On the Bow. See *Bearing.*

Bow-Chasers. See *Chase.*

Bow-Fast. See *Fast.*

Bow-Man. See *Oar.*

Bow-Timbers. See *Timbers.*

BOWER. An abbreviation for Bower-Anchor. See *Anchor.*

BOW-LINE. A rope fastened by a cringle to the bow-line-bridles near the middle of the leach of a square sail, and rove through a block fixed at some convenient part before the sail; it is used to hold the leach well out and steady, when sailing close-hauled, in order to enable the ship to keep near the wind. Hence, she is said to *stand on a bowline,* or *on a taut bowline,* when close-hauled.

Bowline-Bridles. Spans of rope attached to the leach of a square sail; to which, as already explained, the bow-line is made fast.

BOWSE (pronounced *bowce*). To pull upon a tackle.

BOWSPRIT. A large and strong spar which runs out from a vessel's bow: to this all the stays of the fore-mast are secured, except in sloops and schooners whose fore-stay is secured to the stem-head. It also supports, by means of the *Bowsprit-cap* and *Bowsprit-heart,* the jibboom which runs out over its top. (Plates III. and IV).

A standing bowsprit, is one that is fixed permanently in its place: *a running bowsprit* (used for sloops and smacks), is one that can be eased in like a jib-boom.

Bowsprit-Shrouds. Strong ropes leading from nearly

the outer end of the bowsprit to the luff of the bow, to support and strengthen the bowsprit. We may here notice that the ropes used in a similar way for the jib-boom are termed *Jib-guys*. (Plates III. and IV.)

BOX-HAULING, or BOXING A VESSEL OFF, is performed by bracing to the head-yards, that is, hauling in their weather braces, until the head sails are brought aback and by their operation pay the ship's head off to leeward when she would not otherwise answer the weather-helm.

BOXING. See preceding article, and *Dowells*.

BOXING *the Compass*. See *Compass*.

BRACES or RIDERS, in shipbuilding, strops of iron which are used to bind a vessel efficiently; such as those which are bolted to the ship's sides over the ceiling, and reach from the heads of the floors to the clamps of the lower deck between the hold-beams, or else are connected with the hanging-knees of these beams: they are introduced into weak ships, or in some cases into a vessel that is getting a continuation of her class. See also *Trussing (Diagonal)*.

Braces also denote ropes by which yards are turned about to trim the sails to the wind. They are fastened to, or rove through blocks at, the yard-arms. (Plates III. and IV.)

BRACE A YARD, to turn it about horizontally by means of the braces.

To counter brace the yards, means to brace a vessel's head yards one way and the after yards another.

BRACE-ABACK. To brace the yards so as to lay the sails aback.

BRACE-ABOUT. To brace the yards round in any direction, either for the purpose of tacking, or in consequence of a change of wind.

BRACE-BY. To brace the yards in contrary directions to each other on the different masts, which has the effect of stopping the vessel.

BRACE-SHARP. The same as *Brace-up*.

BRACE-TO. To brace the head yards a little aback by easing off the lee braces and hauling in the weather ones, in order to assist the motion of the ship's head in tacking.

BRACE-UP, or *Brace sharp up.* To lay the yards more fore and aft, by easing off the weather braces and hauling up the lee braces; which makes the ship sail close to the wind.

BRACE-PENDANTS. See *Pendants.*

BRACKETS. Short triangular pieces of wood or metal fixed under anything as supports. They are sometimes plain, sometimes ornamented with scroles.

BRAILS. Ropes made fast to the outer leach of a fore and aft sail, and passing through leading blocks on the mast or gaff down to the deck, to assist in taking in the sail.

The stowing of a *Jib* at sea is frequently attended with much danger; and brails (for spilling it during this process) have been introduced into some vessels; they are made fast to the head of the jib and are led down through a lizard sewed about the middle of each side of the sail and through blocks fixed to the jib-boom. These deserve to be strongly recommended for general adoption. See *Traveller (Jib).*

To brail up a sail, means to haul it in by means of the brails.

THROAT-BRAILS. See *Throat.*

BRAKE. See *Pump.*

BREACH. The sea is said to *make a breach* over a vessel when a wave breaks over her.

BREAD-ROOM. A place parted off below deck for containing bread or biscuit. It should be lined with tin or some similar metal in order to exclude vermin.

BREADTH. See *Shipbuilding* and *Straight of Breadth.*

BREAK, in shipbuilding, any sudden termination and rise of a deck, such as the termination of the main deck (in some merchant vessels) where the quarter deck commences.

BREAK BULK. See *Bulk.*

BREAK GROUND. To weigh anchor in order to quit any place.

BREAK SHEER. To swerve from the proper direction in which a vessel should be when at anchor *(Darcy Lever).* Thus, when a ship is riding at anchor with the tide setting to windward, the wind blowing on one of the quarters, and the vessel being sheered by the helm either to windward or lee-

ward of her anchor—in such a case she is said to *break sheer* if any change in the strength of the wind or tide should have the effect of bringing the ship round with the wind on the other quarter, and forcing her to the opposite side of her anchor; which is frequently the means of fouling it.

BREAK-WATER. Some erection or object sunk at the entrance of a harbour, or any projection from the land into the sea—as a mole, pier, or jetty—so placed at the entrance, that it may break the force of the waves as they roll inwards.

BREAKAGE, in speaking of the stowage of a vessel, implies the leaving of empty spaces.

In Marine Insurance, the term *Breakage* alludes to damage occurring to goods by breaking; with regard to claims on this head, see *Leakage*.

BREAKERS, or GANG-CASKS. Small casks used for bringing water aboard in boats.

BREAKERS also signify billows that break in foam over rocks or sand-banks rising nearly to the surface of the sea.

BREAM. To clean a vessel's bottom by burning off the filth, &c., and sweeping it with a broom.

BREAST-FAST. See *Fast*.

BREAST-HOOKS. Large crooked pieces of timber bolted horizontally athwart a vessel's bow inside, connecting the stem and the timbers and planks of the bow, and thus binding the sides of the ship together forward, as the transoms secure them abaft. In very sharp vessels, where wood cannot be made available, the breast-hooks are wholly of iron. The breast-hook whereon the ends of the upper deck rest is called the *Deck-Hook;* and that which crosses the hawse-timber above this deck gets the name of a *Dowsing-Chock*, or *Hawse-Hook*.

BREAST-ROPE. A rope put round a man in the chains while sounding.

BREAST-WORK, or BREAST-RAIL. A railing in front of the quarter-deck, or at the after part of the forecastle-deck. The term is but seldom used in the merchant service.

BREECH. The angular part *of knee timber*. The solid part *of a gun* behind the bore.

BREECHING. A rope used to check the recoil of a gun in time of action; and also to lash it when housed during the course of a voyage.

BREEZE, commonly denotes a gentle wind; but this term is more especially applied to a kind of alternating winds generally experienced in settled weather upon coasts or islands situated between the tropics, occasioned by the action of the sun raising the temperature of the land above that of the sea. *The land breeze*, is a current of air which draws off the land during the night; while it lasts, it is very dangerous to sleep in the open air in these hot climates. *The sea breeze*, is one which during the day sets from the sea towards the shore. They prevail during the fair season with remarkable regularity on the Malabar coast. Breezes of this description, particularly *sea-breezes*, occur also in the temperate zones during summer. *(Horsburgh's India Directory)*.

See *Fanning Breeze* and *Fresh Breeze*.

BRIDGE, or BRIDGE-BOARD. See *Gangway*.

BRIDLES OF THE BOWLINE. See *Bowline*.

BRIDLE-PORT. See *Ports*.

BRIG, or BRIGANTINE. A square rigged vessel with two masts. (Plate III. *Note*).

A Brig bends her boom-mainsail (or, as it is called, her *trysail*) to the mainmast, while *a Snow* bends it to a trysail mast: in other respects these two vessels are alike.

A Hermaphrodite Brig, has a brig's foremast and a schooner's mainmast.

See *Cutter*.

BRINE-PUMPS. See description of *Steam-Engine*, Sect. 45.

BRING BY THE LEE. The following distinct explanation of this phrase is given in "*Seamanship both in Theory and Practice*," "Suppose a ship under great sail to be steering south, having the wind N.N.W.; then, west is the weather side; east, the lee side. Now, if by any accident her

head be turned round to the westward, so that her sails are all taken aback on the weather side, she is said to *Broach-to;* but if, on the contrary, her head decline so far eastward as to lay her sails aback on that side which was the lee side, it is termed *Bringing by the Lee.*"

BRING-TO or HEAVE-TO. To adjust a vessel's sails so as to counteract each other, and thus check her progress.

In heaving-to during bad weather, all the sails are taken in but one, which is sometimes a main-topsail close reefed, sometimes a main-stay sail—or, in short, any sail which, with the helm lashed a-lee, will keep the vessel's weather bow to the sea. In this situation she is said to *lie-to.*

BRING-UP, or *To bring a vessel up,* is the same as to cast anchor.

BROACH-TO. See *Bring by the Lee.*

BROAD-SIDE. The whole side of a vessel. In reference to a naval engagement it signifies a simultaneous discharge of all the guns on one side of a ship of war.

BROKEN-BACKED. The same as HOGGED. The former term, however, seems more properly applicable to the case of a vessel which not only droops at each end, but whose keel and keelson are consequently broken.

BROKERS (SHIP). Persons who undertake the management of business matters between shipowners and merchants, in the way of procuring cargoes and charters for vessels, entering and clearing them at the customhouse, &c. Ship-brokers very generally act also as INSURANCE BROKERS, in which capacity they get policies of marine insurance effected for their employers, and attend to the recovery of claims under these policies. The merchants or shipowners for whom such insurances or charters are negociated, "look to the broker for the regularity of the contract, and for a proper selection of responsible underwriters: to him, also, the underwriters look for a fair and candid disclosure of all material circumstances affecting the risk, and for payment of the premiums of insurance:" *(Marshall on Insurance).* A merchant has a right to expect that a broker or agent will boey an *unconditional* order to insure—1. Where the mer-

chant, being abroad, has effects in his agent's hands in this country. 2. Where he has been used to send orders for insurance, and the agent to comply with them. 3. Where the merchant sends bills of lading, with a condition to insure ingrafted on them, and the bills of lading are accepted by the agent. (*Smith* v. *Lascelles*, 2 *T. R.* 187. *Park on Insurance*).

BROWS. See *Stages*.

BUCKETS, are used on board of ships for washing the decks and for other purposes. See the article *Deck-Cargo*.

BUCKET-VALVE (of AIR PUMP). See description of *Steam-Engine*, sect. 16.

BUCKLERS. Pieces of wood fitted inside a ship's bows in the way of the hawse-holes, to prevent water from rushing in. They are of two kinds: the one termed *Riding-Bucklers*, used when the cable is bent, are in two pieces, which, when placed in contact, have an aperture of sufficient size to fit as closely as possible to the chain or rope cable: the other kind, termed *Blind Bucklers*, which have no aperture, are usually fitted in the form of strong shutters attached to the inside of the bows under the hawse-holes, so that, when turned up, they may completely close the hawse-holes, and are secured inside by a strong bar of wood or iron, to prevent the sea forcing them open.

Bucklers are used instead of hawse-plugs in ships of war and large merchantmen.

BUILT, is compounded with other terms to imply the distinguishing form or construction of a vessel, as *Frigate-built*, *Carvel-built*, &c.

A built (or *made*) mast, or block, means one which is composed of several pieces. The lower masts of large ships are *built*, but small vessels have their lower as well as their upper masts formed of whole spars.

BULGE (BILGE).

BULK. The whole of a vessel's cargo when stowed.

Goods are said to be *stowed in bulk*, when they are stowed loose instead of being packed in casks, bags, or the like.

BREAK-BULK. To begin to unload a vessel. An ex-

planation of the legal meaning of this term will be best afforded by reference to the Act 3 and 4 Will. IV. c. 52. By that act it is provided, that if after the arrival of any ship within four leagues of the coast of the United Kingdom, any alteration be made in the stowage of the cargo, so as to facilitate the unloading of any part of it, or if any part be staved, destroyed, or thrown overboard, (except, it would seem proper to add, in the case of jettison), or if any package of the cargo be opened, such ship is considered as having *broken bulk*. This is prohibited until the vessel be duly reported at the Custom House, under a penalty against the master of £100; and all goods not duly reported, or unladen contrary to the terms of that act, are declared to be forfeited. (*Steel's Shipmaster's Assistant.*)

BULKER. A person employed to measure the capacity of goods, in order to ascertain the amount of freight or shore dues chargeable against them.

BULKHEAD, or BULKSHEAD. A partition; in particular, the boarding which separates one part or cabin of a vessel from another. In a merchant vessel, the *fore bulkhead* separates the forecastle, the *after bulkhead* separates the cabin, from the hold.

Some vessels, (especially those which are built of iron), are divided into compartments by athwart-ship water-tight bulkheads, so that a leak sprung in any compartment may not communicate with the rest of the ship. These bulkheads, in order to resist the pressure of the water, should increase in strength in proportion to their depth below the surface of the water. They tend to strengthen the vessel, and of late years are deservedly coming into more general use.

See also *Screen Bulkheads.*

BULL'S EYE. A species of block formed of a piece of stout wood having a hole in the centre, without any sheave, for a small stay or rope to reeve through; it has a groove round it for the strop, which is sometimes of iron.

Also, a round piece of thick glass convex on one side, inserted into the decks, ports, scuttle-hatches, or skylight covers

of a vessel for the purpose of admitting light. Instead of bull's eyes, *patent glasses* of a rectangular form are now in common use.

BULWARKS, or BERTHING. A fencing of boards nailed round a vessel on the outside of the stanchions and timber heads above the level of the decks. See *Rails* and *Quarter-boards.*

BUM-BOATS. Boats of provision dealers, &c., which come alongside of ships in port.

BUMPKIN. A short boom of wood or iron projecting from each side of the bow of a square-rigged vessel, used to extend the clue of the foresail to windward, or (in nautical phrase) to board the fore tack to. There are, in like manner, bumpkins projecting over the quarters with blocks at their outer ends to reeve the main braces through.

BUNT. The middle of a sail, more particularly when furled to the yard.

To bunt a sail, means to haul it up to the yard and stow the middle part of it.

BUNT-GASKET. See *Gasket.*

BUNTLINES. Ropes fastened to the foot ropes of square sails to draw them up to the middle of the yards, for facility in furling.

In *Darcy Lever's* "*Young Sea Officer's Sheet Anchor*," it is very properly noticed that "as many coasting vessels have no buntlines to their topgallant sails, it would be well if the necessity of carrying them were strongly enforced; because, when it blows fresh, these sails (generally left to the management of boys) are very heavy to hand; and if there be no buntlines to spill them, the result may be fatal to those on the yard arm by the sails blowing over to leeward."

BUNTLINE-CLOTH. See *Lining.*

BUNTINE or BUNTING. A kind of thin woollen cloth whereof a ship's colours and signals are usually made.

BUOY. A floating cask, or block of wood, attached by a rope called the *buoy-rope* to an anchor, in order to shew its position after being cast. The rope should be of sufficient strength to weigh the anchor in case of need. See *Strop.*

Buoys are also floated over dangerous banks, shallows, or other obstructions to navigation, in order to warn vessels off.

To stream a buoy, means to let it drop into the water previously to casting anchor. *A buoy is said to watch*, so long as it appears on the surface of the water.

CAN-BUOYS, or more properly, *Cone-buoys*, from their being shaped like a cone, are generally of a very large size; they are used chiefly for being placed over banks, or any other object which obstructs the navigation.

NUN-BUOYS are in the form of casks, being large in the middle and tapering towards each end.

LIFE-BUOYS, which are of various descriptions, are used to throw overboard for a person who has fallen into the water to lay hold of, and for similar purposes.

WOODEN BUOYS are blocks of wood, of various shapes, generally having a bolt through them with a ring at each extremity. They are sometimes called *Dolphins*.

BURDEN or BURTHEN. The weight which a vessel will carry when loaded to a proper sea trim; it is generally stated in tons. The registered tonnage of a vessel is ascertained by certain fixed rules of measurement, which are noticed under the head *Tonnage;* and we may observe that the number of tons' register is usually much less than the ship's burden, except in very sharp vessels.

The burden of vessels in the coal trade is very frequently stated in *keels*.

BURTON. A small tackle formed by several blocks till the rope becomes three or four fold, and acquires additional power in proportion. It is used for many purposes, especially to set up topmast shrouds, whence it has been called a *top-burton-tackle*.

A single Spanish burton, has three single blocks; or two single blocks and a hook fixed to one of the bights of the standing part of the tackle. *A double Spanish burton*, has one double and two single blocks.

BUSH. A circular piece of metal let into the sheave of a block. The operation of letting it in is called *bushing* or *coaking*.

The bushes in which the crank-shaft, side-levers, &c., of a marine engine work, are commonly made of brass in order to have little friction.

The term *bushing* is also applied to the operation of dovetailing a piece of metal into the vent of a gun, particularly of a brass one, when the vent has got too large: such a repair is very insufficient.

BUTT or But. The joining of two timbers or planks which unite endways. See *Hook-Scarph.*

When a plank has been loosened at one end, by a vessel's weakness, by labouring, or otherwise, she is said to have *started a butt.*

Planks or pieces of timber which unite endways, are said to *butt* or *abut* against each other; and in like manner, the planks on a vessel's side which run to the stem or to the sternpost, are said to butt against the stem or sternpost respectively.

Butt also means the larger end of a tapering piece of timber. Hence the phrase *top and butt.*

See *Scuttled Butt.*

BUTTOCK. The rounding part of a vessel's after body, under the counter.

Buttock-Lines. See *Shipbuilding.*

BY THE BOARD. A mast falling is said *to go by the board,* if it have given way at or near the deck.

By the Head. If a vessel draw more water forward than aft, she is *by the head.* If her stern be lower in the water than her head, she is *by the stern.*

CABIN. An apartment for the accommodation of the officers, crew, or passengers, on board of a vessel. This term is sometimes applied to the berths in which they sleep. Bedrooms detached from the main cabin or saloon, get the name of *state-rooms.*

Cabin-Boy. A boy employed to serve in the cabin.

CABLE. A large strong rope, or chain, to hold a vessel when at anchor. Most vessels of this country are now supplied with chain cables: the rope cable being almost entirely

out of use, except in some foreign vessels. Chains have the advantage of not being liable to chafe by friction; in riding by them, also, the weight of the chain causes it to form a bight or curve which makes it rise and fall easily with the action of the sea upon the ship, and serves to prevent any sudden jerk upon the anchor. See *Chain* and *Hawse.*

The Stream Cable, is a hawser or rope used to moor the vessel, after coming to anchor in a river or haven. It is the largest of the water-laid ropes of a vessel.

Bend the Cable. See *Bend.*

Bitt the Cable. See *Bitts.*

Heave in the Cable; to draw it into the ship by winding about the capstan or windlass. See *Heave Short.*

See also *Pay out* and *Slip.*

CABLE-BENDS. Two small ropes for lashing the ends of a rope cable to its own part, in order to secure the knot (or *clinch*) by which it is fastened to the anchor ring.

Cable-Laid Rope. See *Rope.*

Cable's Length. A measure of 120 fathoms,—the usual length of a hempen cable.

CABOOSE. A cast-iron cooking apparatus used on board of vessels. See *Cook-house.*

CAISSON or Caissoon. A kind of floating dock made of wood, which is sunk to the required depth by letting water into it. It contains an air receptacle, which allows it to sink only to a certain depth, whereupon it is hauled under the ship's bottom, the entrance is closed, the water pumped out, and the ship, after being steadied upon it by shores or sliding bilge blocks, is by this means completely raised out of the water without leaving her moorings.

We may here notice that a machine for the above purpose, called a *Screw-dock,* is met with in the United States of America. This apparatus consists of a platform which is sunk below the water to a sufficient depth, suspended by iron screws from a strong wooden frame work; the vessel to be raised is floated over the platform, and being steadied upon it by means of shores, is lifted high and dry between the frames by the combined power of the lever, wheel and pinion, and screw.

There is also a similar machine in use there, called the *Hydraulic-dock,* the platform whereof is suspended by chains which pass through cast-iron pullies on the top of the framework, and are connected with a hydraulic engine. (*Mr Stevenson's Civil Engineering of North America).*

Caisson, also denotes a vessel used instead of gates for a dry dock. It is usually in the form of a ship divided longitudinally, and is fitted with valves or sluices to admit or eject water as may be required, for sinking it in its place to close the entrance, or floating it to open the dock.

CALL. A whistle used by the boatswain in a ship of war to pipe the hands to their different duties.

CALM LATITUDES. That tract of the ocean which is situated near the Equator and subject to calms of long continuance.

CAMBER, in shipbuilding, a slight arching upwards.

A vessel whose floor is higher at the middle than towards the stem and stern is said to be *cambered.*

Camber is also a name given to a small dock in any of the royal dockyards, used for boats and for loading and discharging timber.

CAMFERING. See *Chamfering.*

CAN-BUOY. See *Buoy.*

CAN-HOOKS. Slings commonly made of rope or chain with flat iron hooks at each end. They are used for hoisting light casks, the hooks being placed on the chimes of the cask, and the tackle hooked to the centre of the slings.

CANISTER-SHOT or CASE-SHOT. See *Shot.*

CANNON. See *Gun.*

CANOE. A peculiar kind of boat used by the natives of America and other parts. It is sometimes formed of the trunk of a tree hollowed, and sometimes of one or more pieces of bark, skin, or the like fastened together.

Some canoes are made to carry sail, but they are commonly rowed with paddles.

CANT. To turn anything over. See also *Flensing.*

CANT-TIMBERS. The timbers at the bow and stern of a vessel which stand obliquely to the line of the keel."

CANVASS, or SAIL-CLOTH. The cloth of which sails are made.

It is generally made 24 inches, sometimes 30 inches wide, in pieces called *bolts*, varying from 36 to 42, but most commonly 38 to 40 yards in length. A bolt of Navy canvass, which is always of the best quality, is about 40 yards in length. To distinguish the different qualities of canvass, each bolt is numbered, and a bolt 38 yards long and 24 inches in breadth ought to weigh as follows:—No. 1, 44lbs.; No. 2, 41; No. 3, 38; No. 4, 35; No. 5, 32; No. 6, 29; No. 7, 24; No. 8, 21; No. 9, 18; and No. 10, 15lbs. The two last numbers are not common.

CAP. A strong thick block of wood with two holes through it, the one square and the other round, used to confine together the head of one mast and the lower end of the mast next above it. When made of iron it is called a *crance*. (Plates III and IV).

Caps also denote square pieces of wood laid upon the upper blocks on which a vessel is built, to receive the keel.

The term *cap* is also applied to any covering such as lead put over the heads of iron bolts, to prevent their being corroded by exposure to the action of water or copper.

CAP-SQUARES. Crooked clamps of iron forelocked one on eachof the trunnions of a gun, to keep it steady in its carriage at sea.

CAPE. See *Promontory*.

CAPSIZE. To overturn.

CAPSTAN or CAPSTERN. A machine consisting of a cylinder or *barrel*, (as it is called,) which revolves round a vertical iron spindle fixed in the deck; the barrel having a broad cylindrical piece of wood, sometimes made of two semicircular pieces, fixed upon its upper extremity, forming what is termed the *Drumhead*, which is pierced with a number of holes to receive the bars or levers, called the *capstan bars*, whereby it is turned round. In many vessels these holes have ornamental plugs fitted into them, which can be unshipped when required. An iron pin is inserted through

the drumhead and each of the bars, in order to prevent the latter from flying out during the revolution of the capstan. The spindle is fitted into a block of wood, called the *Step of the Capstan,* which is fixed securely between two of the ship's beams.

This machine is used like a windlass for weighing the anchor, or generally for a strong purchase in heaving or hoisting. Men-of-war and some large merchant ships weigh their anchors by capstans; other vessels use a windlass. Ships of great burden have often two or more capstans, the *fore capstan,* and the *after* or *main capstan,* &c.

See *Drumhead, Messenger, Pawls,* and *Swift.*

Come up the Capstan. To slack off the rope or cable on which they had been heaving.

Heave the Capstan. To move it round by means of the bars, in order to create the required purchase upon the chain or rope that is wound around its barrel.

Rig the Capstan. To fix the bars in the capstan holes in order to prepare for heaving.

Surge the Capstan. To slacken the rope which is round the barrel while heaving, in order to let it fly up towards the smaller end, and so prevent its parts from riding or getting foul.

CAPTAIN. The commander of a vessel. In merchant ships, he is commonly called the Master, under which head we treat shortly of his duties and responsibilities. In the Royal Navy, the title of Captain is properly given only to *post-captains, i. e.,* to those who have been posted to the rank of Captain, which is next above that of a Commander, R.N. The term *post-captain,* however, is now in disuse.

In the Royal Navy, *captain* is also a designation given to the principal seamen of particular gangs of men, as captain of the forecastle, of the hold, of the main, fore, or mizen top &c.

Captain of the Fleet. "A temporary appointment given through the Lords Commissioners of the Admiralty to a flag officer, or senior captain, where a Commander-in-Chief has ten or more ships of the line under him. All the orders of

the Commander-in-Chief are issued, and all returns made, through the Captain of the Fleet."

CAPTURE, as applied to maritime affairs, is the taking forcible possession of ships or goods belonging to the subjects of one nation, by those of a hostile nation. Under a general policy of insurance, the underwriters are liable for loss occasioned by capture, as well as by pirates, and for salvage incurred to those by whom the ship or goods may be recaptured. The possibility of the property being thus recovered does not, however, suspend the rights of the insured to claim for a total loss: if restored after a settlement of the loss is made, the recaptured property belongs to the underwriter; if before a settlement is made, the latter is responsible only for the amount of loss or damage actually sustained. (*Tenterden. Park*).

See *Ransom.*

CARDINAL POINTS. See *Compass.*

CAREEN. To heave a vessel down upon her side in the water by purchases upon the masts, in order to repair or clean any part which is below the water-mark. A beach prepared for laying vessels upon for this purpose is called a *Careening-beach.*

CARGO. The lading or merchandise with which a vessel is freighted. Under this head, it is proper to refer especially to the articles *Average, Bill of Lading, Charter Party, Clearing, Deck-Cargo, Dunnage, Freight, Insurance, Jettison, Manifest,* and *Stowage.*

In treating of Bottomry, we have noticed that where the value of the ship is insufficient as a security for obtaining necessary advances, which cannot be obtained on personal credit at a foreign port into which she has put in distress, the master has the power of hypothecating the freight and cargo as well as the ship; that is to say, of including them all under a bond of bottomry. In such a case of necessity, he has also the choice of selling a part (but not the whole) of the cargo. When loss has arisen on a sale of this description, the value to be replaced is regulated in the same way as if it were a jettison; and the practice is to make the

loss, like bottomry premium, fall proportionally on all who have to bear those expenses, to meet which the sale was made. The loss of freight on such goods is treated in the same manner. Again, if profit have arisen on the sale, it follows, that those who would have borne the loss ought to receive the profit. The proprietor of goods thus sold to pay for disbursements at an intermediate port, must look to the *owner of the ship* for payment of the value which they would have realised at the port of destination: though the latter be insolvent, there is no recourse against the underwriters beyond the proportions attaching to those average expenses for which they are respectively liable to the insured: (*See Powell* v. *Gudgeon*, 5 *Maule and Selwyn*, 431. *Sazay* v. *Williams*, 1 *B. and Creswell*, 7).

"In the delivery of goods at the port of destination, the master should be careful to adhere strictly to his engagement with the shipper."

Cargo-Book. The master of every coasting vessel is required (by Act 3 and 4 Will. IV. c. 42 § 112), to keep a *cargo-book*, stating the name of the ship, of the master, of the port to which she belongs, and of the port to which she is bound on each voyage: in this book he is to enter, at the port of lading, an account of all goods taken on board, with the names of the respective shippers and consignees, so far as they are known to him—and at the port of discharge, the respective days on which such goods are delivered out of the ship; also the respective times of departure from the port of lading, and of arrival at any port of discharge. The book is to be produced (as often as it may be demanded) to the coast-waiter or other proper officer, who has liberty to make any notes or remarks therein. These regulations are guarded by heavy penalties. No coasting vessel is allowed to discharge or take in cargo until due notice be given to the Collector or Comptroller of Customs, and the necessary documents granted. (*Steel's Shipmaster's Assistant.*)

A list of certain articles exempted from the Coast Regulations may be seen in *Clement's Customs' Guide*, 1844-45, page 133.

See the article *Transire.*

CARLINGS. Fore and aft pieces of wood fitted in tiers between a vessel's beams, with the upper sides of which they are made flush. Between the carlings, and between the ship's sides and the carlings, there are athwartship pieces, termed *Ledges,* introduced in the like manner. The whole of these form a framing for the deck to rest upon. See *Coamings.*

CARPENTER *of a vessel:* a person whose peculiar duty it is to keep in order the hull and spars, and the boats belonging to her. In merchant vessels, more especially in small ones, he has also to do the ordinary duties of a seaman. See also *Shipwright.*

CARRICK-BITTS. The same as Windlass-bitts. See the article *Bitts.*

CARRONADE. A kind of short gun having (like a mortar) a chamber for the powder.

CARRY AWAY. To break a spar, &c. or to part a rope; it is used chiefly in the former sense.

CARTEL. See *Transports.*

CARTRIDGE. A case containing the charge of a fire-arm and made to fit its bore. Cartridges for heavy guns or mortars are made of flannel.

CARVEL-BUILT, implies that the planks of a ship or boat are all flush; that is to say, their edges being fayed to each other, and not overlapping as in *clinker-work.* When the plates of an iron vessel are flush, they are said to be *Jump-jointed.*

CASING, in shipbuilding, a method of lining similar to veneering, commonly used for the beams and ceiling in cabins.

CASK. A barrel for liquor, provisions, or the like. See *Bilge, Chime, Quarter,* and also *Bed, Aburton, and Stowage.*

CAST. To pay a vessel's head off, in getting under weigh on the tack she is to sail upon. We say cast to *Starboard,* or to *Port,* according as her head is to be paid off to the right or to the left.

To cast the lead, is the same as to heave it. In the same sense we also say, "take a cast of the lead".

CAST AWAY. Shipwrecked.

CASTOFF. To loosen from or let go; as, to cast off a vessel in tow.

CAST-KNEES. Those hanging knees which crook or arch over the corner of a gun port, rider, &c. in a ship of war. (*Shipwright's Vade Mecum.*)

CAT. The tackle used to hoist an anchor up to the *Cat-head.* See this last term.

CATAMARAN. A sort of raft or float formed by fastening a number of poles to each other sideways, and laying boards, planks, &c. on the top. The catamarans used in the Brazils, and which have also been common in the East Indies, consist of three logs of wood tapered at one end and lashed together. They are furnished with paddles, and are said to pull as fast as boats, the men being squatted in a kneeling position, and managing them with wonderful dexterity in passing the turf which beats on the shores. Those used in the Brazils also carry sail.

CAT-FALL. The rope by which an anchor is catted. See *Cat-head.*

CATHARPINS, or CATHARPIN-LEGS. Ropes or irons used to confine the standing rigging to the mast at the lower extremity of the futtock shrouds. These are out of use in merchant vessels, as the futtock shrouds now come down to the mast itself, to which they are bound by a hoop of iron.

CAT-HEAD. A strong piece of oak projecting over the bow of a vessel at each side; it has at its outer end generally three sheaves, through which and a large block called the *Cat-block* (having the same number of sheaves,) the cat-fall is rove; with this the sailors *cat the anchor*, that is to say, hook the cat-block to the ring of the anchor and haul it up to the cathead.

CAT-STOPPER. See *Stopper.*

CATSPAW or "CATSKIN." A partial current of air sweeping the surface of the water lightly, while all around is calm, and then passing away.

Catspaw, is also a name for a certain hitch made on a rope.

It may be found explained and illustrated, along with other hitches, in *Dana's Seaman's Manual.*

CAULK. To drive oakum into the seams between a vessel's planks, in order to render them water-tight: when well performed, it serves as an additional binding to the vessel.

An iron instrument, called a *caulking-iron,* resembling a chisel, is used with a mallet for this purpose; after which, another iron, called a *making-iron,* which has a groove in it, is employed to finish off the seam. See also *Reeming* and *Rasing-Iron.*

CAVITY, in the science of shipbuilding, signifies the hollow formed in the water by the bottom and sides of the vessel. See *Centre.*

CEILING. The inside planking of a vessel. It has also received the name of *footwaling,* but this term seems more applicable to the thicker planks—viz., those inside the bilge which are termed bilge planks, and the limber-strake or futtock-plank (Plate II. fig. 6.)

CEMENT *(Roman).* A manufactured mineral of great tenacity: it is mixed with a little water when used, and, from the rapidity with which it hardens, is peculiarly adapted for any mason work under water, as for building docks, &c. See also *Mastic.*

CENTRE of DISPLACEMENT, or *Centre of Cavity,* n the science of shipbuilding, is the mean centre of that part of the vessel which is immersed in the water. It is sometimes called the *centre of immersion,* or *centre of buoyancy*; and is also the centre of vertical pressure that the water exerts to support the ship.

See *Meta-Centre.*

CHAFING-BOARD. See *Battens.*

CHAFING-GEAR. Mats or other stuff put upon a vessel's rigging and spars to prevent their being chafed.

CHAIN. A vessel's *chain cable* is familiarly called her *chain.* As already mentioned under the article "Cable," few vessels belonging to this country now carry rope cables, the former being considered preferable. Chain-cables are divided into parts of from fifteen to twenty-five fathoms in length,

these parts being connected by shackles, any one of which may be cast off when it is found necessary to slip from the anchor.

The Chain Well, or *Chain Locker*, is a receptacle below deck, for containing the chain cable, which is passed through an iron pipe called a *deck pipe*. Steam vessels have frequently also a box on deck for this purpose, which is mounted on wheels so that it may be easily moved about in order to trim the ship.

CHAINS (*Main*, *Fore*, or *Mizen*). A name given to the channels and chainplates, to which the lower rigging of a vessel's main, fore, or mizen mast, is secured.

CHAIN-PLATES, or CHANNEL-PLATES. Iron plates fastened to a vessel's sides for the purpose of securing the shrouds of the lower rigging. The bolts by which they are fastened get the name of *Chain-bolts* or *Channel-bolts*. See *Dead-eyes* and *Channels*.

CHALDERS. See *Rudder-bands*.

CHAMBERS, in vessels which have floor and futtock riders, are the clear spaces between the riders. See also descriptions of *Carronade*, *Mortar*, and *Pump*.

CHAMFERING or CAMFERING. Cutting the sharp angles off the edge of a plank or piece of timber.

CHANNEL. The navigable track of a river, or the like; in this sense it is the same as *fairway*. The term *channel* is also applied to an arm of the sea separating an island from the main land, or two islands from each other.

CHANNELS, (*Main*, *Fore*, and *Mizen*). Thick pieces of plank fayed and bolted edgeways to a vessel's sides, nearly abreast of each respective mast: through notches on their outer edge the chain-plates are carried, in order to give greater spread to the shrouds of the lower rigging, and keep them clear of the rail. They also get the name of *Guard-boards* or *Channel-boards*. See *Dead-eyes*.

CHANNEL-PLATES. See *Chain-Plates*.

CHANNEL-WALES, in a ship of war, the outside plank which receives the bolts of the chainplates.

CHART, or SEA-CHART. A representation or "*hydrographical map*" of the terraqueous globe, or of any portion of it

that is composed principally of water, wherein are laid down with great precision and minuteness the objects on the sea coast, such as beacons, light-houses, &c., the rocks, shoals, and soundings, the directions of the winds where they are peculiarly prevalent, together with the variations of the magnetic needle and other particulars important for the guidance of mariners.

The charts principally in use among seamen are the Plane and Mercator's charts. *A plane chart* is constructed on the supposition that the earth is an extended plane; "and when on such charts it is attempted to exhibit the latitudes and longitudes of places, the meridians are drawn parallel to each other, the degrees of the parallels of latitude and those of the meridians being represented as equal to the degrees of the equator: hence, the relative positions of places are so erroneously laid down as to be of scarcely any practical utility, except when, from the small surface intended to be represented, neither latitude nor longitude require to be considered:" plane charts are accordingly seldom used in any but coasting vessels. *Mercator's chart* (so called from Gerard Mercator, who first brought it into use about the year 1556) has all the meridians made parallel to each other, and the degrees of longitude all equal; the degrees of latitude on this chart increase towards the poles in the same proportion as the degrees of longitude on the globe are diminished. Mercator's chart is most commonly used in navigation, "because on it alone the track of a ship, always steering the same course, appears a straight line, and thus all calculations respecting the latitude and longitude of a ship steering a course which cuts all the meridians at the same angle are reduced to the utmost simplicity." *(Mrs Taylor's Epitome. Raper's Practice of Navigation).*

Halley's Chart, commonly called the *Variation Chart,* is a Mercator's chart, whereon are drawn a number of curve lines shewing the variation of the compass in the places through which they pass. (*Baharie's Marine Board Examination*).

Bottle charts, are charts "exhibiting the direction and strength of currents so nearly as can be ascertained from data obtained by papers found in bottles sent adrift for that pur-

pose on the ocean." See *Nautical Magazine*, vol, xii. wherein a bottle chart of the Atlantic is presented, along with a variety of general information on the subject.

CHARTER. *To charter a vessel,* is to take her to freight under a charter-party.

CHARTER, or CHARTER PARTY. A deed or written contract for the letting to freight the whole or part of a vessel for one or more voyages. This agreement is termed a *contract of affreightment,* and the ship is said to be *chartered* for the voyage.

The parties to a charter may be either the principals themselves, or their agents: that is to say, either the ship-owner or ship's husband and the merchant; or the master and the factor or mercantile agent. It is not correct, however, to make out a charter in name of the *master,* except at a foreign port, or when he is a part-owner of the ship.

A penalty is sometimes attached for non-performance of the agreement.

See *Freight.*

CHASE, in shipbuilding, a long sloping mortice.

CHASE, or *Give chase to,* means to pursue a ship or fleet. *Chase,* denotes also the act of pursuit.

A vessel pursued is called a *chase;* that pursuing is termed *the chaser.*

The guns pointed from the bows and the stern of a ship of war get the name of *bow-chasers* and *stern-chasers* respectively; they are generally long, in order to carry to a great distance.

CHASE-PORTS. The gun ports at the bows and the stern of a ship of war.

CHASER. See *Chase.*

CHECK. *To check a brace,* implies to slack off a little upon it, and belay it again. *To check a yard,* is to lay it a little more square, by slacking the brace in like manner, when braced sharp. This is done when the wind becomes more favourable, or when the ship has to sail more free.

CHEEKS *of a mast.* See *Hounds.*

CHEERLY. Quickly, heartily, with a will.

CHESTREES or CHESS-TREES. Pieces of wood bolted one on each side of a square rigged vessel with a large hole through which the main tack is boarded, that is to say, hauled down. Instead of wood, iron plates, with thimble eyes, are now in common use, the tacks themselves being frequently of chain in place of rope.

CHIMES. The ends of the staves of a cask, where they project beyond the head of the cask.

The parts between these and the bilge are called the *quarters.*

CHIME, or CHINE, in shipbuilding, that part of the waterways which projects above the deck plank and is notched or hollowed in front to form a water course. *Chimed,* implies notched or hollowed out in the above manner.

CHINSE. To caulk lightly.

CHISELS (Cold), are short stout chisels made of steel, used for cutting iron bolts, and for like purposes.

CHOCK, in shipbuilding, a piece of wood used for filling up any want or defect. (See Plate II. fig. 6). In vessels of war there are *chocks* brought under the ends of the beams, or under the shelf that is immediately beneath the beams, to support them and to receive the bolts of the knees which connect their ends with the ship's sides.

Anchor-Chocks, are pieces indented into a wooden anchor stock where it is defective in the way of the shank.

Boat's-Chocks, are clamps of wood for a boat resting upon when stowed on a vessel's deck.

See also *Rudder-Chocks* and *Stow-Wood.*

CHOCK-AFT, CHOCK-HOME, and CHOCK-OUT, &c., imply as far aft, home, &c. as possible.

CHOCK-A-BLOCK, or *Block and Block,* is the situation of a tackle when the blocks are hauled close together. The same as hauled *two-blocks.*

CHOKE THE LUFF. See *Luff-Tackle.*

CHOP ABOUT. The wind is said to *chop about,* when it changes suddenly. When it changes frequently during a short space of time, we say the wind is *flying about.*

CHRONOMETER. A particular kind of watch with

a compensation adjustment which enables it (and that with great accuracy and minuteness) to measure time equally in all climates or temperatures. It is used at sea to determine the longitude. Marine chronometers are generally hung by a species of gimbals in square boxes. Ships going distant voyages ought to be furnished with several chronometers, for the purpose of correction, and in case of accident to any single one.

The *rate* of a chronometer is that number of seconds which it loses or gains on the twenty-four hours of a mean day: this is called *plus* when there are more, *minus* when there are less than twenty-four hours indicated by it in that space of time.

By making allowance for the rate, the actual time at Greenwich (from which our longitudes are calculated) is obtained, and the difference between this and the time ascertained by observations of the altitude, at the place where the ship may be—calculating fifteen degrees for every hour of this difference—gives the longitude of the place.

Some important directions as to the use of this instrument are given in the Introduction to *Horsburgh's India Directory*. On this subject we would also specially refer to *Riddel's Epitome of Navigation and Nautical Astronomy*.

CILLS [*Sills*].

CINQUE PORTS (or Five Ports). A term applied to the ports of Sandwich, Dover, Hythe, Romney, and Hastings, which, for political purposes, were invested by Will. I., with certain privileges and immunities, and placed under the charge of the Constable of Dover Castle, with the title of Lord Warden of the Cinque Ports: other ports were afterwards added to these, "the jurisdiction of the whole collectively extending from Birchington, near Margate, in Kent, to Seaford in Sussex." "The organization of the Cinque Ports," (says Mr Waterston in his *Cyclopædia of Commerce*), "was almost entirely broken up by the Parliamentary and Municipal Reform Acts, but the Warden still possesses an Admiralty Jurisdiction with the execution of writs and custody of debtors. He also appoints three or more commissioners at

each of the Cinque Ports, who are authorized to decide upon all claims for salvage or assistance rendered to vessels and their cargoes; an appeal lying from their decision to the Admiralty of England, or to that of the Cinque Ports."

CIRCLES. The circles supposed to be described on the celestial sphere, in order to point out the positions of the bodies, are distinguished as *great* or *less :*

A great circle, is one whose plane passes through the centre of the sphere; *a less circle,* is one whose plane does not pass through the centre of the sphere. "All great circles upon a sphere, therefore, divide it equally, and all less circles divide it unequally. Those two points on the surface of a sphere which are equidistant from every part of the circumference of one of its *great circles,* are called the *poles* of that great circle" (*Norie's Epitome of Navigation*).

AZIMUTH CIRCLES, or VERTICAL CIRLES. See *Azimuth.*

CLAMPS, (also called *Seacrafts),* in shipbuilding, the uppermost strake of ceiling, which, like the bilge plank, is thicker than the rest of the ceiling. This is considered to be one of the principal binding strakes. (Plate II. fig. 6). The clamps are scarphed together, and should be securely bolted to the ship's sides : the ends of the beams, as well as the fore and aft knees, rest upon their upper edge. Immediately under the clamps of the lower deck, a second range of clamps is often introduced, which (if due attention be paid to have them bolted to the proper timbers) affords a substantial binding in the pitching, and also in the rolling motion of the vessel.

Any plate of iron made to turn or open and shut, so as to confine a spar or boom—as a studding-sail boom or a boat's mast—is called a *clamp.*

Clamp is also the name for a species of block, either wood or iron, with only one cheek, the mast or boom, &c., to which it is nailed forming the other cheek.

CLAP ON. To lay hold of a rope or tackle in order to haul upon it.

CLAPPER. A name for the valve of a pump-box.

CLASSIFICATION OF SHIPS. See *Lloyd's Register.*

CLAW-OFF. A term sometimes used to denote the act of beating to windward in order to get off a lee shore.

CLEAN. See *Lean*.

CLEAR. The reverse of *Foul*. See that article.

CLEARING *a vessel*: consists in entering at the Customhouse all particulars relating to her so far as these may be required upon arrival at, or previously to departing from, any port, as well as in the payment by the parties concerned of such duties as may be exigible upon her cargo, &c.

The master of every vessel, whether laden or in ballast, is bound (under a penalty of £100) to make due report to the Customhouse, within twenty four hours after her arrival from any foreign port. In like manner, no ship is allowed to depart from any port in the United Kingdom or the Isle of Man, with goods or stores for parts beyond the seas, until she have been duly cleared by the customhouse officers; the collector or comptroller signing a document called a *cocket*, descriptive of the goods, as a warrant for the searcher allowing the respective goods to be shipped. Before any goods can be taken in for a new voyage, or the vessel cleared outwards, the master must deliver to the collector or comptroller a certificate from the proper officer of the clearance inwards or coastwise of such ship for her last voyage. If any goods be taken on board a ship before she shall be entered outwards, the master is liable in a penalty of £100. But should it be necessary to take in any heavy goods before the whole inward cargo is discharged, the collector and comptroller have the power to issue what is called a *stiffening order* for that purpose previous to her entry outwards.

The master of any vessel outward-bound has to apply to the searcher for a *victualling-bill*, which is a warrant for the shipment of such stores as he may require, and as shall be allowed by the collector and comptroller for the use of the ship on her intended voyage; and no articles taken on board are deemed to be stores unless inserted in the victualling bill.

Before the ship be cleared outwards, the master has also to deliver a *content* of such ship to the searcher, describing her destination, and detailing the goods shipped, with other par-

ticulars; this content is to be compared with the cockets, and the indorsements and clearances thereon, which for this purpose are delivered by the respective shippers of the goods to the searcher, and they are filed and sealed by him along with an attestation of their correctness.

The file of cockets and the victualling bill are delivered to the master and kept by him as his authority for departing from the port with the goods and stores therein described. If the ship be in ballast, the clearance is noted by the Collector or Comptroller upon the victualling bill. If there be no cargo on board but only the necessary personal baggage of passengers, the master passes an entry and receives a cocket for such baggage, and is allowed to clear her as a ship in ballast. There are regulations in regard to slates and chalk laden for foreign parts, &c., being considered as ballast.

The clearance of coasting vessels is noticed under the head *Cargo-book*.

More full and explicit information on the whole of this subject may be had by reference to *Steel's Shipmaster's Assistant*, *Pope's Yearly Journal of Trade*, or *Clement's Customs Guide*.

Mr Pope, in his Journal of Trade for the year 1842, very properly remarks that the documents relating to the report and entry of ships and goods can be passed through the different offices with safety only by practical and experienced persons, and in such matters, therefore, he recommends generally the employment of some respectable broker or custom-house agent.

CLEATS, in shipbuilding, pieces of hard wood with notches in them, used for setting shores against.

There are also cleats made of wood or iron of various forms, used for belaying ropes to, and for other purposes.

CLEW. [CLUE].

CLINCH. A half hitch stopped to its own part. By this species of running knot secured by the cable-bends, a rope cable is made fast to the anchor ring.

To clinch a bolt, is to fasten it by hammering down its point upon a ring or piece of plate-iron.

CLINCHER-BUILT or CLINKER-BUILT, (pronounced Clinker), implies that the planks of a ship or boat overlap each other and form projections on her bottom. This disposition of the planks is called *Clinker work,* as opposed to *Carvel work.*

When the plates of an iron vessel are disposed in the above manner they are said to be *Lap-jointed.*

CLOSE *the land:* an expression sometimes used to imply coming near to it.

CLOSE. A vessel sails *close to the wind,* when her head is just so near the wind as to fill the sails without shaking them.

CLOSE-HAULED. A term implying that a square-rigged vessel is sailing with her yards braced up, so as to get as much as possible to windward. The same as "*On a taut bow-line,*" *Full and by,*" or "*On a wind.*" *(Dana's Seaman's Manual).*

The terms *Close-hauled, Full and by,* and *On a wind,* are in like manner applicable to fore and aft rigged vessels sailing close to the wind.

CLOVE-HOOK. An iron clasp in two parts moving upon a pivot, and overlapping one another. It is used for bending chain-sheets to the clues of sails.

CLUB-HAUL. A particular method of getting a vessel on another tack, in order to clear the land when she is close upon it, and it blows so hard with a head swell that she will not stay; while the effect of standing on, or of wearing, would be to run the ship ashore. It is done by putting the helm alee, and when the ship's headway is stopped, letting go the lee anchor, which brings her head up to the wind; then casting on the other tack by means of the sails, after slipping the cable.

Club-hauling may sometimes be resorted to with advantage, in the case of steamers, when a vessel is in a narrow river, or when she is caught with a violent wind on a lee shore, and owing to her great length she cannot be otherwise brought round: in such a case, also, if due care be taken, the anchor may be hove up again, so soon as she swings to it, by keeping the ship (by means of the steam power) moving slowly in that direction.

CLUBBING. Drifting down a current with an anchor out.

CLUE or CLEW. Either of the lower corners of a square-sail: the after lower corner of a fore and aft sail. See also *Hammock*.

CLUE-GARNET. See the following explanation of Clue-Line.

CLUE-LINE. A rope leading through a block on the yard down to the deck, for hauling, or, as it is termed, *clueing* up, the lower corner of a squaresail. The clue-lines used for the courses are rove through blocks made fast to the clues of the sails, and they get the name of *Clue-Garnets*.

(Plates III and IV).

CLUE-ROPE. An eye or loop generally formed by the boltrope at the lower corner of a square sail, and to which the sheets are made fast.

CLUTCHES [CRUTCHES].

COAKS or COGGS. See *Dowells*. The term *Coaking* is also used in the same sense as *bushing*.

COAL-TRIMMER. See *Stoker*.

COAMINGS, COMINGS, or COMBINGS. Pieces of plank, generally fayed on carlings, and raised higher than the flat of the deck, forming the fore and aft boundaries to openings in it, such as the hatchways or skylights, in order to prevent water running down into the vessel off the deck. The athwartship boundaries of such openings (when not formed by the ship's beams) are called *ledges*.

COAST or SEA-COAST. That portion of any country which is washed by the sea.

COAST-WAITER. See *Customs*.

COASTER, or COASTING-VESSEL. A vessel employed in the coasting trade.

COASTING. Sailing along a coast.

The Coasting Trade of the United Kingdom is by law confined to British ships; and all trade by sea from any part of the United Kingdom to another part thereof (except as to goods liable to duty when carried to the Isle of Man) is deemed *coastwise;* this trade is confined to British ships

navigated wholly by British seamen: and no goods may be carried in any coasting ship unless laden in the United Kingdom or Isle of Man.

Under the provisions of the Merchant Seamen's Act, 7 and 8 Vict. c. 112, the master or owner of every vessel of the burthen of 80 tons or upwards, employed around the coasts of the United Kingdom, or in proceeding to the Channel Islands, or to the Continent between the River Elbe inclusive and Brest, or in fishing elsewhere than in the Newfoundland, South Sea, or Greenland fisheries, must deposit with the Collector or Comptroller of Customs of any port in the United Kingdom, within twenty-one days after the 30th of June and 31st December in every year, the agreement noticed under the article "Seaman;" and every such vessel, whatever her burden may be, must likewise deposit a list, in general terms, of the voyages in which the ship has been engaged during each preceding half-year, and of all the persons who have belonged to the vessel during that time, agreeably to the form Schedule (D) of Appendix to the Act.

See *Cargo-book* and *Transire*.

COAT. A piece of stout canvass painted or tarred, nailed round a mast at the hole where it enters the deck, to make it water-tight. This is called a *mast-coat*.

A similar piece of canvass attached to the pumps is called a *pump-coat*.

In some ships, particularly in any sharp deep-waisted vessel not having a patent rudder, there is a *coat for the rudder* nailed round it on the bottom of the rudder-case, to prevent the admission of water in the event of the ship fetching sternway.

A coat, as is well known, is also applicable to the materials with which a ship is painted, or her sides and bottom paid. As a "coat of tar," or the like.

COBLE. A low flat boat, with a square stern, principally used by salmon-fishers.

COCK-BILL. See *A-Cock-bill*.

COCK-PIT. An apartment beneath the lower deck of a vessel of war, used by the surgeon and his assistants during

an action. In large vessels, there is a fore and an after cockpit, the latter containing the medicine chest, &c. In frigates, and ships of a higher rate, the gunner's, boatswain's, and carpenter's store rooms are in the fore cockpit; in smaller vessels, again, there are bins round the fore part of the mess-deck used for containing these officers' stores.

COCKET. See *Clearing.*

COCKSWAIN or COXWAIN. The individual who steers a boat, and has the charge of her.

COGGS or COAKS. See *Dowells.*

COIL. To lay a rope up in the form of a ring with one turn or fake over another.

A Coil, is a quantity of rope laid up in this manner. *A Flemish Coil,* is made by coiling the rope in a circular or elliptical form, with each fake outside of the other, beginning in the middle.

COIR. A kind of cordage made in Ceylon and other places, from the fibrous covering of the cocoa nut. It is inferior in quality and value to European rope; but has the advantage of floating in water.

COLOURS. The distinguishing flags of any nation.

COLLAR. An eye in the end or bight of a shroud or stay to go over the mast head. The strops which attach the heart of the forestay and the bobstay to the bowsprit, and other similar strops, also receive the name of *collars.*

COLLIER. A vessel employed exclusively in the coal trade.

COLLISION. The act of one vessel driving against or running foul of another. "There are four possibilities," (says Sir William Scott, in the case of the *Woodrop, Sims,* 2 *Dod. Ad. Rep.* 38), "under which an accident of this sort may occur. *In the first place,* it may happen without blame being imputable to either party, as where a loss is occasioned by a storm; in that, the misfortune must be borne by the party on whom it happens to light; the other not being responsible to him in any degree. *Secondly,* A misfortune of this kind may arise when both parties are to blame; where there has been a want of due diligence and skill on both

sides; in such a case, the loss is apportioned between them, as having been occasioned by the fault of both; the damage and costs being assessed, are put into one sum, and divided equally between the parties. *Thirdly*, it may happen by the misconduct of the suffering party alone; and then the rule is that the sufferer must bear his own burden. *Lastly*, it may have been the fault of the ship which ran the other down; and in this case the injured party would be entitled to an entire compensation from the other." It is enacted, that the owners of the ship in fault shall not be liable in any case beyond the value of the ship and freight; hence, if that vessel be totally lost, it appears that the other can have no claim for recovery. See the article *Pilot*.

An underwriter is not liable for damage done to other vessels by the ship insured, unless this risk be specially included in the policy. Such a liability, when undertaken, is generally restricted to the amount insured by the policy; and a claim of this description is recoverable, though it do not amount to three per cent. on the value of the ship insured.

With a view to avoid the frequent occurrence of collisions at sea or in rivers, the following rules of navigation are enforced. "Sailing vessels having the wind fair shall give way to those on a wind: when both are going by the wind, the vessel on the starboard tack shall keep her wind, and the one on the larboard (or port) tack bear up, thereby passing each other on the larboard (or port) hand: when both the vessels have the wind large or abeam, and meet, they shall pass each other in the same way on the larboard hand, to effect which two last-mentioned objects, the helm must be put to port. When steam vessels on different courses must unavoidably or necessarily come so near that by continuing their respective courses there would be a risk of coming in collision, each vessel shall put her helm to port, so as always to pass on the larboard (or port) side of each other. A steam vessel passing another in a narrow channel must always leave the vessel she is passing on the larboard hand." These rules are deemed by practical men to be in a certain degree ambigu-

ous and susceptible of amendment: Mr W. J. Lamport's "Treatise on Collisions at Sea," wherein their merits are discussed at some length, is well deserving of consideration.

COLURES. See *Ecliptic.*

COLLECTOR OF CUSTOMS. See *Customs.*

COMBINGS (Coamings).

COME HOME. See *Anchor.*

COME UP *a rope* or *tackle:* to slack it off. See *Capstan.*

COMING-TO, or Coming-up, denotes the approach of the ship's head towards the direction of the wind. See *Falling-off.*

COMINGS (Coamings).

COMMANDER. The master of a merchant vessel. In the Royal Navy, it is a title given to officers (next in rank above lieutenants) appointed to the command of ships, previously to their being posted as captains; vessels commanded by them receive the name of *Sloops-of war.* A commodore has a commander in his ship acting under him.

COMMISSION. An allowance (generally stated at so much per cent.) given to agents or factors for transacting the business of others. *Commission on advance* is a per centage charged on sums of money advanced by them for behoof of their employers.

Commission also signifies the warrant of office granted by the Lords Commissioners of the Admiralty to lieutenants or any other officer of higher rank, in the Royal Navy. Hence they are styled *commissioned officers.* When a captain and officers are appointed to a ship of war, the vessel is said to be *in commission,* as soon as the pendant is hoisted.

COMMISSIONERS OF CUSTOMS. See *Customs.*

COMMODORE. A senior captain in the Royal Navy appointed to the command of a squadron of ships of war destined on some particular service; his vessel carries a broad tapering pendant. If appointed to the permanent rank of commodore, his pendant, which gets the name of a *broad-pendant,* is forked; and he is allowed, by courtesy, to wear it in the presence of an Admiral.

COMPANION. A raised hatch, or cover, to the cabin stair of a merchant vessel.

COMPANION-WAY or COMPANION-LADDER. The stair-case to a vessel's cabin.

COMPANY (Ship's). The whole officers, men, and boys, employed on board of a vessel.

COMPASS or MARINER'S COMPASS. A well-known instrument shewing all the different bearings for the guidance of a ship at sea, whence it is called the *steering-compass*. It consists of a circular *case*, either of brass or wood, suspended within a square wooden box by two concentric rings called *gimbals*, forming universal joints, so as to allow the case to remain horizontal in any position of the ship; within the case there is a card, called the *fly*, supported by a pin, whereon it turns freely; and to the under side of the card there is attached a steel bar which gets the name of the *needle*, and which, from being magnetised, has the property of pointing one of its ends towards the North Pole.

The card or fly is divided by lines radiating from the centre, into thirty-two equal parts, called *points* or *rhumbs*, representing the divisions of the horizon; the *North*, *South*, *East*, and *West* points are distinguished by the name of the *cardinal points*. The circumference is also divided into 360 degrees.

On the inside of the case is drawn a dark vertical line called *Lubber's-point*. This line and the pin on which the card turns, are in the same plane with the keel of the ship, and hence the rhumb opposite to lubber's-point shews the course of the ship at any time, that is to say the angle which the line of her course makes with the magnetic meridian. "But as lubber's-point deviates a little from its proper position when the ship is heeled over, seamen do not implicitly depend upon it, as indeed its name implies," *(Raper's Practice of Navigation)*.

The needle almost everywhere is subject to a certain *variation* either east or west from the true north point. "This variation" (says Mr Horsburgh in the *Introduction* to his *India Directory*, where valuable information on this subject

is presented) "is in a state of continued change in most places of the globe, and there is also a *diurnal* and *annual* variation of the variation." The variation is in practice ascertained by comparing the sun's true and magnetic *amplitude* or *azimuths*. In some parts of the world, a difference, which is called an *aberration* or *deviation*, is often found between the bearings taken when the ship's head is pointed in different directions. Owing to the influence of iron upon the needle, a compass will alter when taken from one ship to another, or when shifted to a different situation in the same ship. (*Norie's Epitome of Navigation. Encylopædia Britannica*).

To Box the Compass, is to repeat the thirty-two points of the compass in their order. See also *Dipping-needle*.

AZIMUTH-COMPASS. See *Azimuth*.

HANGING-COMPASS. A compass so constructed as to hang with its face downwards. This is found convenient when it is intended to be used in the cabin of a vessel. It is sometimes called a *Tell-tale*.

COMPASS-TIMBER. Curved or crooked timber.

COMPLEMENT. In navigation, the *complement of the course* is what it wants of 90° or 8 points; the *complement of latitude* (or as it is termed by way of abbreviation, the *co-latitude*) is what the latitude of a place wants of 90°. See the article *Supplement*.

A vessel's complement, signifies the proper number of the ship's company.

COMPOSITION, used in shipbuilding for various purposes, is a species of brass composed of a mixture of copper, zinc, and other substances.

COMPRESSOR-STOPPER. See *Stopper*.

COMPTROLLER OF CUSTOMS. See *Customs*.

CONDEMNATION. A vessel is said to be *condemned* when she is declared by the sentence of the Court of Admiralty or other competent court, in the event of having been captured, to be lawful prize—to be forfeited to the state for smuggling, or any other offence—or to be incapable, through the effects of decay or damage, of being repaired, and to be

unfit for being employed in future for the purposes of navigation. Any vessel sold under such a sentence of condemnation as that last mentioned, is (by Act 3 and 4 Will. IV. c. 55) never again entitled to exercise the privileges of a British ship.

The sale of a vessel by the master at a foreign port is justified only by a case of extreme necessity, where there is no possibility of having her damages repaired: if there be any means whatever of having such repairs executed, he cannot by selling her, though he may consider it the most advisable course, convert what is truly an average into a total loss; and even the sentence of a Vice-Admiralty Court abroad, following upon the report of surveyors, has been held not to be *conclusive* by the courts in this country *(Soames* v. *Sugrue,* 4 *C.* and *P.* 476.*)* In the case of *Gardner* v. *Salvador* (1 *M. and Rob.* 116) Mr Justice Bayley remarked, "I do not know of such a head of insurance law as "Loss by Sale." With regard to cases where the impossibility of raising the necessary funds except at an extravagant expense may appear to justify a sale of the ship, the greatly increased and rapid facility of communication with different parts of the world would doubtless be held of weight in considering the propriety of a sale. See the article *Abandonment.*

CONDENSER. See description of *Steam-Engine,* Sect. 11.

CONDUCTOR (Marine). A metal wire or chain reaching from above each of a vessel's highest masts downwards into the water, in order to defend the ship from lightning, by conveying the electric fluid into the sea. Wire rope is said to form an excellent lightning conductor.

CONJUNCTION. Celestial bodies are *in conjunction,* when in a line together as seen from the centre of the earth; or, in other words, when they have the same degree of longitude: they are *in opposition,* when 180 degrees from each other. *(Raper's Practice of Navigation. Squire's Grammar of Astronomy).*

CONNECTING-ROD. See description of *Steam-Engine,* Sect. 27.

CONNING. The operation of directing the steerage of a vessel.

CONSIGN. To send goods to the care of an agent or factor for the purpose of being sold or disposed of. The party to whom they are sent is called the *consignee*, and the goods themselves are termed *a consignment*. See *Average Bond*.

CONSORT. A vessel sailing in company with another.

CONSTELLATIONS. Clusters of fixed stars into which astronomers have subdivided the starry firmament.

CONSTRUCTION. See *Inspection*.

CONSUL. An officer appointed by a Government to reside in some foreign country for the purpose of facilitating and protecting the commerce of the subjects of such government.

Among the various duties of a British consul or vice-consul, we may notice the following. He is to relieve distressed British mariners, and adopt measures for having them sent home; to claim, recover, and pay salvage upon, and account for, all wrecks, cables, and anchors found at sea by fishermen or others. By the act 7 and 8 Vict. c. 112, he is required to receive from the master of every British ship during her stay at his port, the register tickets of the crew, agreements, and other documents, to be returned with a certificate of their delivery a reasonable time before the vessel's departure, and to notify any breach or neglect of the statutory regulations; his consent is required in hiring, discharging, or leaving behind any of the ship's company (except at Colonial ports, where the sanction of a government officer, or, in his absence, of a chief officer of customs, is required); when any such ship is sold, transferred, or disposed of, he is to require the master to deposit in his hands a sum sufficient to defray the expense of sending the crew home, unless they consent in writing to continue on the voyage; or, if this be not done, he is himself to defray such expenses, which, except in cases of barratry, shall be recoverable from the owner of the ship; he is authorized to investigate offences committed by any of the crew, to place such offenders under restraint, and to send

It is distinguished, according to its thickness, into 18 oz. —20 oz.—copper, and so on; indicating the number of ounces contained in one square foot, which varies from 18 to 32 oz.

That part of the hull of the ship which is in the water is covered with sheet copper, nailed on the planks with composition nails, sometimes over paper, or coarse linen cloth, but generally over felt, which is more suitable for the purpose. This covering preserves the wood from the attacks of the worm, to which it is particularly exposed in warm climates; it also gives the ship the advantage of passing more rapidly through the water, as the copper bottom remains always smooth; for, owing to the galvanic effect produced by the action of the sea water upon it, sea weed and shells will not adhere to copper as they do to the bare planks. This action produces a rapid decay of copper, which lasts in some cases five years, in others not more than two or three years, according to the thickness of the sheets, and quality of the copper, and the trade in which the vessel may be employed.

Where a vessel having suffered damage, is to be recoppered at the expense of the underwriters, the practice in this country is to charge them with the difference of price between old and new metal, for the weight of the copper sheathing stripped off; but if any sheets have been lost by being rubbed off, they are liable to replace the full cost of these under the customary deduction of one-third. See *Draft.*

Copper sheathing has of late years been much adulterated, and a composition metal known by the name of *Muntz's Patent Yellow Metal* is now frequently used in its stead.

Copper-Fastened. A term implying that a vessel has her keel, keelson, breast-hooks, transoms, butt-ends, and other parts (below the wales), securely bound by copper or patent metal bolts, the dove-tail plates for the keel and the stem-foot being also of the same material. In any contract for the building of a copper-fastened ship, it would be well, in order to avoid dispute, specially to notice whether the rudder-bands shall be of iron or composition metal.

COPPERS, or Ship's Coppers. A general name for the cast-iron apparatus used on board a vessel for cooking.

CORAL REEFS, or Coral Shoals. Chains of coral rocks, which (Mr Horsburgh mentions) abound chiefly within the tropics, particularly in the Indian and Pacific Oceans, and round New Holland; many of the islands being surrounded by these reefs, or standing upon a coral base. They are produced by what are called *zoophytes*, a species of animal partaking of the nature of plants; these take root at the bottom of the sea in deep water, whence the stems gradually branch upwards, and become transformed into solid rock. When these concretions of coral reach near the surface of the sea, they become dangerous obstructions to navigation; after they appear above it, they form into islands of various dimensions, according to the extent of their original basis. *(Horsburgh's India Directory).*

Some mariners assert that by digging into any coral reef to a depth below the surface of the sea, fresh water may be obtained. Without vouching for the truth of the allegation, it seems advisable to notice it.

CORDAGE. A general term for rope of any size. Cordage for ships is commonly tarred; when not so, it is called *white rope.*

CORPORAL *of a Ship of War.* A petty officer, whose duty, among other things, is to assist the master-at-arms in detecting offenders.

CORVETTE. A particular kind of vessel of war; it is rigged like a ship, and carries one tier of guns on a flush deck.

COT, or Cott. A square bed frame slung from a vessel's beams. Cots are used for the accommodation of the officers.

COUNTER. That part of a vessel's stern between the wing transom and the archboard. (Plate II., fig. 5).

COUNTER BALANCE WEIGHT, and LEVER. See description of *Steam Engine*, sect. 5.

COUNTER BRACE. See *Brace.*

COUNTER-RAILS. Ornamented rails, or rather a sort of ornamental moulding across a square stern, at the lower

part of the vessel's counter; into these the counter and the ends of the bottom plank finish.

COUNTER-SUNK, implies a hollow cut round the edge of a hole, by means of a small triangular tool with two cutting edges, called a *counter-sunk bit*. Its most common application is for the purpose of allowing the head of a nail to be sunk, so as to be even with the surface into which it is driven.

COUNTER-TIMBER. See *Timbers*.

COURSE, in navigation, the angle which a vessel's track or path makes with the meridian: it is expressed in points of the compass.

Also, the direction in which a vessel is intended to go. In this sense, we speak of *shaping a course*.

COURSES. The common term for the sails which, in a square-rigged vessel, hang from the lower yards. The fore-sail is called the *fore-course*; the mainsail, the *main-course*.

COVE. A creek or small bay forming a natural harbour.

COVERS *for sails*, are made generally of coarse canvass, tarred or painted, and are used to protect them from the effects of the weather when stowed.

COVERING-BOARD. The same as *Planksheer*.

CRAB. A portable machine, whose frame is made either of wood or cast-iron, fitted with wheels and pinions similar to those of a winch. It is used chiefly in loading and discharging vessels employed in the timber trade.

CRADLE, in shipbuilding, a frame placed under the bottom of a vessel in order to conduct her steadily in the ways when she is launched. See also *Slip (Patent)*.

CRAFT. A general name for river traders, lighters, or any boats or vessels employed in shipping and discharging goods. Also, a cant term applied by seamen to any vessel whatever.

CRAMP. A machine for screwing two pieces of timber together.

CRANAGE. The liberty of using, or the money paid

for the use of a *crane*, which is a well known machine employed for raising and lowering great weights.

CRANCE. A kind of iron cap on the outer end of the bowsprit, through which the jib-boom traverses. Also a name sometimes given to any boom iron. See *Cap*.

CRANK. A term applied to a vessel which will not stand up to her canvass, or, in other words, is too apt to be heeled over by the pressure of her sails. This may be owing to her stowage; or to her construction—particularly from being built too deep in proportion to her breadth, or from being overmasted. *Stiff* is the opposite term.

CRANKS *of a Steam Engine*, CRANK-PIN, and CRANK-SHAFT. See description of *Steam Engine*, sect. 29.

Crank-Hatches. Hatches raised on coamings to a proper height on a steam vessel's deck in order to form coverings for the cranks of the engines.

CREEK. A small inlet of a river or of the sea.

CREEPER. An iron instrument with several hooked claws, used for dragging the bottom of the water for any thing lost.

CREW. The whole persons employed on board of a ship or boat: it is more particularly applied to all who are under the master of the ship.

By the Merchant Seamen's Act, 7 and 8 Vict., c. 112, § 26, the master of any vessel bound to parts beyond the seas (except in voyages to Jersey, Guernsey, Alderney, Sark, and Man, or to the Continent between the River Elbe, inclusive, and Brest), must, before he leaves his first port of departure in the United Kingdom, deposit with the collector or comptroller of such port a list of his crew, in the form set forth in schedule (G) of appendix to that statute; and should any change in the crew occur before his final departure, he must deposit an amended list at the nearest customhouse. Again, within forty-eight hours after the arrival of such vessel at her final port of destination in the United Kingdom, he must deposit a list of the seamen and others (including apprentices) who shall have belonged to the ship during the

voyage, in the form schedule (C) of appendix: without a certificate from the collector or comptroller that such delivery has been made, the ship is not to be cleared inwards, and the tidewaiters or other officers left on board are to be maintained at the ship's expense until such list be delivered. The half-yearly lists of voyages made by coasters, and by vessels going to Jersey and other places above excepted (which are noticed under the head *Coasting trade),* must contain an account of the persons who have belonged to the ship at any time during that period, in the form schedule (D) of appendix to the act.

In a ship of war, the men employed respectively under the boatswain, gunner, and carpenter are called their *crews.*

CRINGLE. A short piece of rope with each end spliced into the bolt-rope of a sail; commonly confining an iron ring or thimble. See *Bowline.*

Bowline, Buntline, Reef-pendant, and Reef-Tackle-pendant Cringles are so named after the ropes to which they are attached.

Earing-Cringles are for lashing the extremities of a sail to the yard when bending or reefing. Those at the upper corners of the sail are term *head* or *head-earing cringles.* Those further down the edge of the sail are termed *reef-cringles.*

CROSS-CHOCKS. See *Chock.*

CROSS-JACK-YARD. The lower yard on a mizen mast. Also, a yard that is hoisted upon a sloop's mast, or upon the foremast of a fore and aft schooner, to set the square sail upon when going before the wind.

CROSS-HEAD. See description of *Steam Engine,* sect. 22 and 24.

CROSS-PIECE, or Cross-Bitt. A piece of timber bolted athwart two bitts for belaying ropes to. Also, a rack with belaying pins through it, extending from the carrick-bitts over the windlass. See *Timbers.*

CROSS-SPALES, or Cross-Pawls. See *Baulk.*

CROSS-TIMBERS, or Cross-Pieces. See *Timbers.*

CROSS-TREES. Athwartship pieces of timber resting upon the trestle-trees or on a cap at that part of a mast where it is connected with the mast immediately above; used for spreading the rigging of the upper mast. (Plates III. and IV.)

JACK-CROSS-TREES. Iron cross-trees at the head of any long topgallant mast.

CROW. A bar of iron slightly bent at one end with a claw for drawing nails. *A crow-bar,* has no claw, and is used as a lever for moving heavy bodies. *A shackle-crow,* is a similar bar of iron with a shackle instead of a claw at the bent end; it is used for drawing bolts.

CROWFOOT. A particular kind of iron stand attached to the end of a table, in a ship of war, and hooked to one of the beams above; on this the mess-kids, &c. are hung.

See also description of *Awning.*

CROW'S-NEST. A name given to a sort of sentry-box or watch tower (invented by the late Captain Scoresby), which is placed on the main-topmast cross-trees, or main topgallant cross-trees of a whale fishing vessel, for the shelter of the look-out-man when employed on the fishing ground at Davis' Straits.

CROWN *of an anchor*: that part where the arms are joined to the shank.

To CROWN *a knot,* is to pass the strands of the rope over and under each other above the knot, by way of finish.

CRUISE. To sail about in quest of an enemy. An expedition of this kind is called *a cruise,* and the vessel so employed *a cruiser.* See *Cutter (Revenue).*

CRUTCHES. Iron knees or pieces of knee timber placed horizontally athwartships in the after-peak of a vessel, to secure the heels of the cant timbers abaft and to connect them with the stern frame. This binding is rendered the more substantial when the tails of the crutches extend forward sufficiently far to be connected to the after floor heads. Every ship above 150 tons burden should have at least one crutch.

Also, stanchions of wood or iron whose upper parts are

forked to receive rails, spars, masts, yards, &c.; they are fixed along the ship's sides and gangways.

The iron stand fixed upon the taffrail for a boom to rest on when the sail is stowed, is in like manner called a *crutch* or *crutch-iron.*

CUCKOLD'S NECK. A knot by which a rope is secured to a spar, the two parts of the rope crossing each other and being seized together.

CUDDY, in East India ships, a name for the cabin under the poop in which the captain, &c. and passengers mess and sleep.

A small cabin such as that in a pleasure boat sometimes gets the name of a *Cuddy.*

CULMINATION, in astronomy, the transit or passing of a star over the meridian. A star is said to *culminate,* when it passes the meridian.

CULVERTAILED. A term applied to the fastening or letting one timber into another so as not to slip out: for instance, the carlings into the beams of a vessel.

CURRENTS *of the sea*: its progressive motions at different places. These seem to be, in a great measure, regulated by the prevailing winds, as well as by the rotation of the earth and the effects of the tides.

The *drift* of a current means the rate at which it flows. The *set* of a current is its direction. The direction of a current, we may notice, is generally named from the point of the compass towards which it is running; the direction of the wind or waves from that point whence they come. Thus, a *northerly current* is one setting northwards; a *north wind,* as is well known, means one blowing from the north.

CUSTOMS. Duties levied upon goods exported or imported. The term *Customhouse* is applied in a general manner to the establishment by which the customs revenue is collected and its regulations enforced: and, in a more limited sense, to the building in which, at any port, the business is carried on. The Customs department of the public revenue is conducted in London by a board of commissioners. The duties of most of the officers of customs, more particu-

larly of the collectors and comptrollers, we briefly notice below.

The most useful books of reference on the subject of the customs are *Clement's Customs Guide, Ellis's Laws and Practical Regulations of the Customs,* and *Pope's Yearly Journal of Trade,* which contain a mass of information equally important to shipmasters as to merchants and others. Abstracts of the customs regulations are given in *M'Cullochs Commercial Dictionary* and in *Waterston's Cyclopædia of Commerce;* and very full information on this head is to be found in *Steel's Shipmaster's Assistant,* along with a list of the stations at which all vessels arriving at or departing from the several ports of the United Kingdom are required to bring to in order to the boarding or landing of the customhouse officers.

Collector of Customs. An officer who takes the general superintendence of the customs at any port; the comptroller acts as a check upon him.

The Merchant Seamen's Act, 7 and 8 Vict. c. 112, assigns to the collector or comptroller of customs at every outport, various duties under the Registrar of seamen in London; they have the charge of issuing register tickets to seamen, and of furnishing lists of cancelled tickets to the masters or owners of vessels on application. Agreements with seamen, or attested copies thereof, have to be deposited with them, as well as various lists and returns required by the act from shipmasters, in order to their being transmitted to the registrar in London; for these they are required to give a written acknowledgment to the master. If the original of any agreement with seamen be deposited with the collector or comptroller, he is to retain it in his hands until all the wages to which it relates are settled, and then transmit it to the registrar. Indentures of apprenticeship have to be registered by the collector or comptroller, who must also attest and register any assignments thereof. See the articles *Apprentice, Master,* and *Seaman.* The collector or comptroller is further empowered to muster the crew of any merchant vessel, to call for production of documents in order to see that all statutory regu-

lations in regard to seamen and navigation have been complied with; and, on the complaint of three or more of the crew, to order a survey of provisions, medicines, or water.

The Landing-Surveyor, appoints and superintends the *Landing-waiters.*

The Landing-Waiters, keep an account of goods discharged from vessels arriving from foreign parts, and act likewise as *Coast-waiters* in superintending the landing and shipping of goods coast-ways. The Jerquer's duty is to examine and check the Landing-waiters' books.

The Searchers, are employed in taking an account of goods to be exported to foreign parts.

The Tide-Surveyor, superintends the tide-waiters, &c., and boards them on vessels arriving from foreign parts; he is also employed in admeasuring vessels for registry. The duty of *jerquing* vessels is performed by him.

The Tide-Waiters, as already noticed, are boarded by the tide-surveyors on ships arriving from foreign parts, for the purpose of preventing any fraud on the revenue from being committed. They keep an account of goods as landed from vessels.

CUTTER. A sharp built vessel, of considerable breadth in proportion to its length, and having one mast, which is rigged like that of a smack.

Revenue Cutters, or *Revenue Cruisers,* are armed vessels of this description employed for the prevention of smuggling. There are also vessels rigged as brigs and schooners employed in this service. See also *Boat.*

CUTTING-DOWN LINE. See *Shipbuilding.*

CUTWATER, or False Stem. A piece of hard wood fayed to the fore part of a vessel's main stem, its tail covering in the fore end of the keel. Its upper end supports the ornament called the figure-head, placed under the bowsprit; it is also sometimes called the *knee of the head.*

CYLINDER (Steam), with appendages. See description of *Steam-Engine,* Sect. 1, 22, and 23.

Cylinder Escape-valves. See description of *Steam-Engine,* Sect. 6.

DAGGER. A term applied to any thing placed obliquely in a vessel. It is now very generally superseded by the term *Diagonal.*

Dagger-Piece. See *Poppets.*

DAMMER. A resinous substance, much used in the East Indies for paying the bottoms of vessels.

DAVITS. Pieces of iron or timber, with sheaves or blocks at their outer ends, projecting over a vessel's sides or stern to hoist boats up to. See *Topping-Lift Davit.*

Fish-Davit. A spar with a roller or sheave at its end, used for fishing the anchor. It is sometimes called a *half-davit.*

DAY. *The astronomical day,* is reckoned from noon to noon continuously through the twenty-four hours, and commences twelve hours after the *civil day,* that is, the day as it is generally reckoned among mankind from midnight to midnight; thus, 9 o'clock in the morning of July 3d is by astronomers called July 2d. at 21 hours. The interval between the departure and return of a meridian to the sun is called a *solar day;* in the case of the moon, the interval is termed a *lunar day;* and in that of a star, a *sidereal day.*

*The Nautical (*or *Sea*) *day* commences at noon, twelve hours before the civil day, and ends at noon of the day following; like the civil day, it is divided into parts of twelve hours each, the first twelve hours being likewise marked A.M. denoting *ante meridiem,* or before noon, the remaining twelve hours marked P.M., that is, *post meridiem,* or after noon. This mode of reckoning arises from the custom of seamen dating their "day's work" for the preceding twenty-four hours the same as the civil day, so that occurrences which happen, for instance, on Monday 21st, afternoon, are entered in the log under the date Tuesday 22d.

Hence, it appears that noon of the civil day, the beginning of the astronomical day, and the end of the nautical day, take place at the same time. (*Norie's Epitome of Navigation. Baharie's Marine Board Examination.*)

See the article *Mean Time.*

DAY'S WORK, in navigation, the reckoning of a vessel's

course or courses during the 24 hours of a nautical day, and thence ascertaining her latitude and longitude.

DEAD-EYES. Circular blocks of wood, through every two of which the lanyards of a vessel's lower rigging are rove. They have three holes in them, without sheaves, and have a groove round them. The under dead-eyes are fixed to the chain-plates by an iron strop going over the groove; and the upper ones are attached to the shrouds of the rigging. Formerly they were so attached to the chain-plates and shrouds on each side of the ship at the channels; but in merchant ships, the channels are now for the most part laid aside, and the chain-plates extend from their original connecting point on the vessel's side to the *top of the rail*, where they are connected with the dead-eyes. Under this new plan, the channels are sometimes still retained, but of a smaller size than formerly, and the chain-plates are carried over or through them to the connecting point on the top of the rail. There are likewise dead-eyes for the topmast rigging, the lower ones fixed to the upper ends of the futtock-plates, and the upper dead-eyes attached to the topmast rigging: these are in like manner set up by lanyards.

There is also a kind of dead eyes, called *hearts*, used for stays.

DEAD-FLAT, in shipbuilding, a term for the midship-frame, or (as Mr Creuze describes it) the widest transverse section; it is always distinguished by this mark ⊕

DEAD-FREIGHT. See *Freight*.

DEAD-LIGHTS. Ports or shutters for the stern and gallery lights, to prevent the water from rushing into the ship in a high sea.

DEAD-ON-END. *The wind is said to be dead-on-end*, when blowing directly contrary to a vessel's intended course.

DEAD-RECKONING. See *Reckoning*.

DEAD-RISING, in shipbuilding, the rising of the midship floor-timber from the horizontal, which is described by the rising-line.

DEAD-WATER. The eddying water which closes in with a vessel's stern and counter when she is under way,

DEAD-WEIGHT. A term applied to a vessel's lading when it consists of heavy goods, particularly such as pay freight according to their weight.

DEAD-WOOD, in shipbuilding, pieces of timber fitted together lengthways on the fore and after ends of a vessel's keel, in order to form a rising basis for the frame at these parts; they also afford a stepping for the heels of the cant timbers.

The upper foremost and upper aftermost pieces of dead-wood are called *Deadwood-knees*; being crooked pieces of timber, the bolting of which connects the keel with the stem and stern-post. They are termed respectively *Stem-knees* and *Heel-knees*.

DEADEN *a ship's way:* to diminish her speed.

DEALS. The name given to the timber of the pine or fir, when sawed into planks. *Standard-deals* are such as exceed seven inches in width, and six feet in length; when under seven inches in width, they are termed *battens;* and when under six feet in length, *deal-ends.* (*Waterston's Cyclopædia of Commerce*). See also *Plank.*

DEBENTURE. A certificate given at the Custom-house to the exporter of goods on which a bounty or drawback is allowed, bearing that he has complied with the statutory regulations, or paid the duties on these goods, and is entitled to such allowance. (*Waterston's Cyclopædia of Commerce*).

DECKS. The flats or floors which are formed by laying the beams of a vessel with plank running in a fore and aft direction.

In merchant ships, the *Quarter-deck* is the aftermost deck, which is raised higher than the *Upper-deck* to give head-room to the cabins; if the vessel be flush-decked, it is the aftermost part of the upper-deck: if she have a poop, the upper-deck is continued, as in the latter case, aft to the stern; and the deck which covers in the poop is called either the *Poop-deck* or *Quarter-deck. The Forecastle-deck* is the foremost part of the upper-deck, under which (if the deck be flush) the sailors generally have their berths; if there

be a raised deck above it, this is called the *Topgallant Forecastle-deck*. That part of the upper-deck which is between the forecastle and poop, that is to say, in the *Waist*, is termed the *Main-deck*; if the upper-deck be flush fore and aft, the whole of it forms the *Main-deck*. The decks which form the floors of the cabin and forecastle are called respectively the cabin and forecastle *Soles*. If the sole be continued forward from the cabin bulkhead, or aft from the forecastle, this portion of it gets the name of the *Half-deck*. See *Steerage*.

In a first-rate ship of war, the decks below the *Main* or *Upper deck* are successively called the *Middle-deck*, *Gun-deck*, and *Orlop-deck*; the *Quarter-deck*, which is distinct from the *Poop-deck*, extends from the poop to the mainmast; the *Main-deck*, from the mainmast to the foremast; and the *Forecastle-deck*, from the foremast to the bow.

DECK-CARGO, or DECK-LOAD, that is to say, cargo stowed on the deck of a vessel, is not (with the exception of carboys of vitrol) included in a general policy of insurance on goods, and is therefore not at the risk of the underwriters unless this be specially stipulated; nor, in case of being jettisoned, is it the practice to allow its loss as general average; though, if saved, it must bear its proportion of any general average claim.

Although the legal decisions as to whether it be a subject of general average contribution are somewhat at variance, yet the above rules are recognised in practice. Serjeant Shee, in a note to page 485 of his recent edition of *Lord Tenterden's Treatise of the Law relative to Merchant Ships and Seamen*, "submits, with diffidence, that a usage in a particular trade to stow goods on deck may relieve the master from responsibility for the loss of goods so disposed; but that in England, as in other maritime states, they are excluded from the benefit of general average." In like manner, Professor Bell, in his *Commentaries on the Law of Scotland*, remarks, "Goods stowed on deck and thrown overboard are not to be relieved by contribution: a claim for indemnity may lie against the master and owners; or the merchant, if he knew that his goods were so stowed, may be held

to have run the risk himself, but the loss is not a proper average." In the case, however, of Milward *v.* Hibberd (reported in the Appendix to *Park on Insurance, edition by Mr Hildyard*), for recovery of the value of one thousand pigs jettisoned in the course of a voyage from Waterford to London, the underwriters having got a verdict on the trial, the question came before Lord Denman on a motion for a new trial, which was granted, but it never took place. In delivering the judgment of the court, his lordship observed, that while the rule of excluding goods stowed on deck from the benefit of general average contribution certainly prevails in practice to a great extent, it is not founded on any universal principle; that the law of England has stopped very far short of the doctrine that contribution shall not, under any circumstances, be recovered; and that it seemed to the court, "that the mere fact of stowing goods on deck would not relieve the underwriters from responsibility, inasmuch as they may be placed there according to the usage of the trade, and so as not to impede the navigation, or in any way increase the risk." He, at the same time, admitted that "the question between the *merchant and shipowner* may be different from that between either of them and the *underwriters*, because the former may agree to stow the goods in such a manner that the latter will not be at all responsible for their loss." Mr Richards, of Lloyd's, states that he has known many recent instances of the jettison of deck cargo being apportioned between, and settled by, the *owners* of the ship and cargo, without recovery under an ordinary policy of insurance. In general, the master would act prudently in not stowing goods on deck without the consent of the merchant.

When the cargo has to be discharged in order to float the ship when stranded, or to allow her repairs to be executed, it is customary to state the expense of discharging the deck-load as general average, along with that of taking out the rest of the lading.

It may here be noticed, that in adjustments of average claims, the loss of miscellaneous articles improperly kept on deck, and washed off by a sea, is not allowed against the un-

derwriters; but if studding-sails, stowed in the long-boat on deck, to be used during the voyage, or other articles which it may be proper to have on deck for immediate service at any time, be washed away, their loss is allowed: in like manner, the loss of buckets off the deck is allowed, but not the loss of water casks, the deck being considered an unsafe and improper place for keeping the stock of water, although there seems to be inconsistency in the practice of extending this objection to the keeping a scuttled butt on deck for constant use.

DECK-PUMPS *of a steam-vessel.* See description of *Steam Engine,* sect. 39.

DECLINATION *of a celestial object;* an arc of a meridian contained between the equinoctial and the centre of the object. It is called *north* or *south declination* according as the object is on the north or south side of the equinoctial.

DEEP-SEA-LEAD. See *Lead.*

DEEP-WAISTED. See *Waist.*

DEGREE. A division of a circle equal to 1-360th part of its circumference. Each degree is divided into 60 equal parts called minutes, and each minute into 60 seconds; marked thus, for example, 26° 59′ 6″.

DELIVER *a Cargo*: to discharge it from a vessel into the custody of its owners or consignee.

DEMURRAGE. The compensation due to the ship-owner from the freighter or from the party who claims and receives goods under a bill of lading, on account of undue delay in the loading or unloading of them, or on account of this not being done within the time specified in the charter-party, or in the bill of lading; in such a case the vessel is said to be *on demúrrage.* The rate *per diem* at which this charge for extra time is to be made, is usually stipulated in the agreement.

If the ship be not loaded, or delivery be not taken, at the expiry of the *lay-days,* that is to say, the stipulated or customary number of running or working days for her loading or discharging, the master ought to protest for demurrage; and when this delay occurs at the port of discharge, he should

deliver the goods into the hands of a wharfinger or warehouseman, for behoof of those concerned.

"It has been determined," says Mr Sergeant Shee, in his edition of *Lord Tenterden's Treatise,* "that delays in loading or unloading a vessel beyond her running days, occasioned by frost, or by custom-house regulations or restraints, or by unlawful seizures of some part of the cargo by custom-house officers, are misfortunes or casualties which fall upon the freighter. He might have protected himself by express stipulation—he might have limited his engagement to pay demurrage to cases of wilful or negligent detention—for delays occasioned by the wrongful act of others, he has his remedy against them—but" (generally) "unless they be caused by the shipowner himself, the freighter or consignee must pay demurrage according to his contract."

Where a certain number of days are specified in the agreement, during which demurrage at a stipulated rate is to be charged, and the delay extends beyond that time, the shipowner has a claim for the actual damage which he can shew that he has suffered by such farther extra detention (*Galloway* v. *Jackson,* 3 *Scott N. R.* 753—*Harrison's Digest,* 1842).

DEPARTURE. The east or west distance which a vessel has made from the meridian of the place she departed from; it is reckoned on a parallel of latitude. Also, the bearing of an object on the coast where a vessel commences her dead-reckoning; the ascertaining of its bearing, and of the distance of the object from the ship, is termed *taking the departure. (Norie. Dana).*

DEPRESSION (or Dip) of the Horizon. See *Horizon.*

DERELICT. Any thing cast away or abandoned at sea. When such derelict property has not been thrown ashore, it is distinguished by the following uncouth legal names: *flotsam,* implying articles that continue floating at sea; *jetsam,* those which are sunk in the water; *lagan,* those which are sunk, but with a buoy attached in order that they may be found again. See *Admiralty (Droits of).*

DERRICK. A single spar supported by stays or guys, and to which a purchase is attached; it is used chiefly in shipping and discharging goods by the hatchway.

DESCENSION. See *Ascension.*

DEVIATION. A voluntary departure, without any necessary or justifiable cause from the usual course of a ship's intended voyage.

When this happens, the insurers under a policy for the specific voyage are discharged from further responsibility, but they retain the premium of insurance, and are liable for any damage which may have happened before actual deviation. If the crew force the master to deviate, the underwriters are not relieved *(Elton* v. *Brogdon,* 2 *Stra.* 1264); this would amount to barratry of the crew. For any loss or damage arising to the cargo after deviation, the shipowner is responsible.

The master is said to be justified in departing from the usual course, in consequence of stress of weather—for the purpose of necessary repair—to escape from an enemy—to seek for convoy—to assist a vessel in distress—to obtain supplies after unavoidable protraction of the voyage—or, on account of the sickness of himself and the crew. "But although a master may deviate for the humane purpose of assisting a vessel in distress, and such deviation would not vitiate his insurance," observes Mr Richards of Lloyd's, "I much question whether, if he make the act subservient to his own gain by claiming reward for his services, his policy would not be annulled."

A permission given in a Policy of Insurance, "to touch and stay at any ports or places whatsoever in the course of the voyage," will not justify the master in departing from the regular course of the voyage insured: and if several places be mentioned at which the ship may touch and stay, she must proceed to them successively in the order in which they are named, or (if they be not individually specified in the policy) in the direct course to her destination, unless some usage to the contrary be established *(Park on Insurance).*

Deviation without justifiable cause from the voyage de-

scribed in an agreement with seamen, amounting to a breach of such agreement, discharges them from their obligation to remain by the vessel. With regard to the mutual duties of the shipowner and seamen in this respect, much valuable information is contained in Symons's "*Law relating to Merchant Seamen.*"

DIAGONAL BRACES, KNEES, &c. are such as cross a vessel's timbers obliquely.

DIAGONAL TRUSSING. See *Trussing.*

DIFFERENCE of LATITUDE and of LONGITUDE. See these terms respectively.

DIMINISHING STUFF, in shipbuilding, a term for the planking wrought under the wales; it is so called because it diminishes progressively till it comes to the thickness of the bottom plank.

DINGY. A name given in the East Indies to small boats hired to attend ships in port.

DIP *of the Horizon.* See *Horizon.*

DIPPING. An object, or any part of it, is said to be *dipping,* when visible just above the horizon.

DIPPING-NEEDLE. An instrument used for ascertaining the amount of inclination towards the earth, or "dip," assumed by the magnetic needle. This inclination increases the nearer we approach the North or South pole. The action or power of the dipping needle is considerably greater than that of the horizontal needle.

By this instrument the latitude or longitude may be found; but it is too delicate to be used with accuracy at sea.

DISC, or DISK, in astronomy, the circular face which the sun or any other celestial body presents to the eye of a spectator.

DISCHARGE VALVE *of Air-Pump.* See description of *Steam Engine,* sect. 17.

DISEMBARK. The reverse of EMBARK.

DISMANTLE *a Vessel,* to unrig her; that is, to send down the rigging, yards, and upper masts.

DISMASTED. A vessel is said to be *dismasted,* when her masts are carried away.

DISPART *a Gun;* to adjust its elevation so as to bring the line of sight and line of metal to be parallel. This is done by means of *sights* fixed on the gun; it may be noticed that, in the Royal Navy, *Miller's sights* are now commonly used, instead of those which were invented by Colonel Congreve.

DISPLACEMENT. The weight of the quantity of water which a vessel displaces when she is floating at rest; it is the same as the weight of the ship.

DOCK. An artificial receptacle for shipping, constructed so that its entrance may be closed when required. There are two kinds; 1st, *Wet Docks,* in which a uniform level of water is maintained, sufficient to keep ships afloat, (an object of great importance), and where the business of discharging and loading may proceed with convenience and safety. The entrance of a wet dock is generally provided with two double gates, having a *lock* between them, (similar to that of a canal), which allows the ingress and egress of vessels for some time before and after high water, without much diminishing the supply of water in the dock. 2d, *Dry Docks,* or *Graving Docks,* used for inspecting or repairing vessels; these are so contrived that after the ship is floated in, the water may run out with the fall of the tide, or be pumped out, the shutting of the gates preventing its return.

The charges for the use of these are termed *dock dues,* and *graving dock dues.*

To dock a vessel, is to place her on blocks in a graving dock, steadying her in an upright position by means of shores, or sliding blocks.

Hydraulic Dock and Screw Dock. See *Caisson.*

DOCK YARDS (Royal). Places where shipbuilding stores for the Royal Navy are deposited, and which have the appurtenances of slips, docks, &c., for the building, repairing, and fitting out of ships of war. The royal dockyards in England are at Deptford, Woolwich, Chatham, Sheerness, Deal, Portsmouth, Devonport, and Pembroke; those established abroad are at the Cape of Good Hope, Gibraltar,

Malta, Bermuda, Halifax, Jamaica, Trincomalee, and Hong-Kong.

THE VICTUALLING YARDS for the Royal Navy, where provisions and similar stores are deposited, are at Deptford, Portsmouth, Plymouth, Cork, and Haulbowline; and abroad at Malta, Gibraltar, Bermuda, the Cape of Good Hope, Halifax, Jamaica, Trincomalee, and Ascension.

DOG. An iron implement having a fang at each end, to be driven into two pieces of wood, for supporting one of them while hewing, &c. Dogs used for masts and yards are of the same form, but smaller; they are driven in at the side of any sheave hole to prevent the rope or chain which is rove through it from cutting the spar. Another sort has a fang at one end, and in the other an eye, in which a rope may be made fast, in order to haul any thing along. Two of this latter kind fastened together through the eyes by a rope, or by a strand of good rope yarns woolded with canvass to prevent chafing, are called *sling-dogs*. If connected by a ring going through the eyes, they are called *ring-dogs*. Both of the last mentioned kinds of dogs are used for lifting timber.

DOG-SHORE, DOG-VANE, and DOG-WATCHES. See the articles *Shore*, *Vane*, and *Watch*, respectively.

DOGGER. A vessel similar in form to the galliot, used by the Dutch in their fishings: some doggers have but one mast, others two. *(Waterston's Cyclopædia of Commerce.)*

DOLPHIN. A spar or buoy secured to an anchor, and generally having a ring in it, for vessels to ride by.

DOLPHIN-STRIKER. A name for the *Martingale*.

DOUBLE-BANK *an oar;* to have it pulled by two men. *A boat is double-banked*, when there are two men on every thwart, each pulling a short oar. The term is derived from "Bank of oars," that is, a bench of rowers in a galley, a kind of vessel which has been common in the Mediterranean.

DOUBLE-BANKER. See *Frigate*.

DOUBLING, in navigation, the act of sailing round a projecting point of land.

In shipbuilding, it signifies planking a ship's bottom twice: this is done in order to strengthen a vessel, when, through age, in consequence of bad shiftings, or otherwise, she has become loosened. The term *doubling* is applied to plank not less than two inches thick: if below this in thickness, it gets the name of *wood-sheathing*.

Whale-fishing ships, for the Greenland and Davis' Straits fisheries, require to be doubled; and round the bows of such vessels, *trebling* is often resorted to, in order the more effectually to withstand the pressure and tear of the ice. For the bows of such vessels, African teak is found more suitable than any other kind of timber, being very hard, tenacious, and durable.

DOUELLS. [DOWELLS.]

DOUSE. To lower or haul down suddenly.

DOVE-TAIL, in shipbuilding, a particular kind of mortise, consisting of a score at the end of a piece of wood, resembling the end of a dove's tail, into which a corresponding piece is fitted. It is cut larger within than without, in order that the two pieces may be held together the more firmly. *(Shipwright's Vade Mecum.)* The operation is called *dove-tailing*.

DOVE-TAIL PLATES. Metal plates, formed like dove-tails, let into the heel of the sternpost and the keel of a vessel, in order to bind them together. Similar plates are used for connecting the stem foot with the fore end of the keel. Rings are sometimes employed which connect the cutwater, stem, and keel; but the dove-tail plates are preferable; for, if connected by a ring, and the ship strike the ground with her forefoot, the lower end of the stem runs a great risk of being shivered: if a ring be used for this purpose, it should be kept clear of the cutwater.

DOWELLS, COAKS, or COGGS. Cylindrical pieces of dry hard wood, about three inches in diameter, and the same in length, used chiefly as an additional security in scarphing two pieces of timber, for which purpose half of the dowell is let into each of the two pieces: in the modern plan of building ships for the royal navy, dowells are used in like manner

to connect the butts of the frame-timbers, when their ends are square, and no cross chocks are therefore required. The operation is called *Dowelling.*

Boxing, or *Tabling,* is a similar operation, done with square pieces of hard wood.

DOWN-HAUL, or DOWN-HAULER. A rope by which any fore-and-aft sail is hauled down.

PEAK-DOWN-HAULER. A rope rove through a block at the peak or outer end of a gaff, to haul it down by.

DOWNS. Barriers of sand along the sea shore, gathered by the force of the wind or waves. Also, the name given to the well-known road for shipping in the English Channel, along the eastern coast of Kent.

DOWSING-CHOCK. See *Breasthooks.*

DRABLER. A piece of canvass laced to the bonnet of a sail in order to give it more drop. (*Dana's Seaman's Manual.*)

DRAFT *of men.* A certain number of men appointed to serve in one or more ships of war; they are said to be *drafted* to the particular ships.

Draft, also means a small allowance for waste on goods sold by weight. The draft usually allowed on copper sheathing stripped off a vessel's bottom, is about 5 lbs. to the cwt.

DRAG, or DRAG-NET. A frame, with a bag-net attached, for dragging on the bottom of the water for flat-fish, or for any thing lost. It also gets the name of a *Trawl-net.* A similar frame, with a bag formed of leather thongs, (called a *Dredge*), is used in oyster fishing.

DRAGGING *the Anchor.* See *Anchor.*

DRAUGHT, in shipbuilding, the drawing or plan of a vessel upon paper, describing the different parts; and from which, when extended to a full scale on the floor of the moulding-loft, the ship is to be built. See the article *Shipbuilding.*

DRAUGHT *of water.* The depth of water which a vessel displaces when she is afloat. If she be fully laden, it is termed the *load water draught;* if unloaded, the *light water*

draught. The number of feet which a vessel draws is indicated by figures on the stem and stern-post.

An *easy* draught of water implies the same as a light draught of water.

DRAW. *A sail draws* when it is filled by the wind. "*Let draw!*" is the order to let the wind take the after leaches of the head sails over to the lee-side, when the ship has come sufficiently round, in the act of tacking.

DRAW-BELLOWS. See *Limbers.*

DREDGE. See *Drag.*

DREDGING-VESSEL, or DREDGING-MACHINE. A kind of large lighter or flat-bottomed vessel, fitted with a steam-engine and machinery, for removing the mud and other deposited matter from the bottom of a river, harbour, or basin; an operation which receives the name of *dredging.*

DRIFT, in navigation, the leeway which a vessel makes, when she is lying-to during a gale. See also *Drive.*

DRIFTS, in shipbuilding, those parts where the sheer is raised according to the height of the decks or gangways, and where the rails are cut off and ended by scroles, which are formed by solid pieces of wood fitted at these parts, called *Drift-pieces. (Shipwright's Vade Mecum.)*

DRIFT-BOLT. See *Bolts.*

DRIFT-PIECES. See *Drifts.*

DRIP-STONE. A familiar name given by seamen to a filtering-stone.

DRIVE, or DRIFT. To be carried at random by the force of the wind or tide, particularly in the case of a vessel's anchor losing its hold of the ground. We also speak of a vessel driving or drifting in a tide way, when she is purposely allowed to be carried along by the influence of the tide.

DRIVER. See *Spanker* and *Trysail.*

DROITS *of the Admiralty.* See *Admiralty.*

DROP. A name given to the depth of lower square sails.

DROPS, in shipbuilding, small foliages of carved work in the stern munions, &c.

DRUM-HEAD. See description of *Capstan.* We may

here notice that in the case of a double capstan, which is so constructed as to be worked both on an upper and lower deck on one shaft, the drum-head of the lower capstan is called a *Trundle-head.*

DRUXY. The condition of timber which has decayed streaks or spots in it of a whitish colour.

DRY-ROT. A disease, caused by the vegetation of fungi, sometimes affecting timber, especially the oak employed in shipbuilding. It tends to spread rapidly, and is very destructive, the decomposed wood becoming "a dry friable mass, without fibrous tenacity." Dryness, cleanliness, and free ventilation appear to be the best preservatives against, or checks to, this vegetable decomposition, while damp accumulations and a vitiated atmosphere rapidly induce it. Timber ought never to be used for shipbuilding purposes unless properly seasoned and dry, while all decayed portions and the whole of the sap or imperfect wood should be carefully removed. The boiling of planks in salt water is recommended as a good preservative against dry-rot, long practised by Mr Bayley of Ipswich. Various preventive solutions with which to saturate timber have been proposed. A plan introduced by Mr Kyan is to soak timber in a solution of corrosive sublimate (see *Creuze's Treatise on Naval Architecture,* page 67). This solution preserves timber from dry-rot and other causes of decay, and it is applied also to the preservation of canvass and cordage. It appears to be extensively used in this country, and is stated to have been adopted by the Dutch government for their navy. The following is a list of the prices charged by the Anti-dry-rot Company of London for its application:—

Timber per load of 50 cubic feet,		£1	0	0
Planks, 10 in. by 3 in. to 12 in. by 3 in.	per foot run.	0	0	1½
Deals,	ditto	0	0	1
Battens,	ditto	0	0	0¾
Canvass,	per bolt,	0	5	0
Tents, awnings, rickcloths, &c.	per square yard,	0	0	4
Ropes,	per cwt.	0	10	0
Nets, 5s., 7s. 6d., and 10s., each.				
Coal and corn sacks,	per score,	0	10	0

The present Director-General of the Medical Department of our Royal Navy, Sir William Burnett, has substituted for this process, saturation with the chloride of zinc, one pound of which dissolved in ten gallons of water is sufficient to prepare and preserve half a load of timber. It is also applied to the preservation of canvass and cordage, and is not only adopted in the Royal Dock-yards, but is said to be coming into general use. A stronger solution of the chloride of zinc renders wood, canvass, cordage, &c., incombustible; and ships of war have now their magazines fitted with wood and felt prepared in this way.

Whale oil is found to be so good a preservative of timber, that no whale fishing vessel is ever touched with dry-rot. The best time for laying it (by means of a tar brush) on a vessel's timbers during the process of building, is after the outside planking is put on, and when the timbers have been thoroughly seasoned, and their inside properly faired for the ceiling; the upper ends of the top-timbers, the beam ends, and the keelson in many places, should also be bored with an augre, and the holes filled with oil. See *Kiln.*

DUBBING. The act of dressing plank or timber with an adze.

DUCK. A fine description of canvass, used principally for skysails and other light sails.

DUMB-CHALDER. See *Rudder-bands.*

DUNNAGE. Loose wood or other materials laid in the bottom of a vessel in order to elevate the stowage; either with a view to raise the heavy goods which might make her too stiff, or in order to keep the cargo sufficiently above the bottom that it may sustain no damage by water should the vessel prove leaky; when the ship has a perishable cargo on board, dunnage is sometimes required on the sides of the vessel. If damage to the goods arise from improper or insufficient dunnage, their owner will be entitled to set it off against the freight, (*Taylor* v. *Forbes, Shaw; Dunlop, and Ballantine,* 113).

Dunnage is also used to keep goods from being injured on a damp floor when deposited in a warehouse.

EARINGS. Ropes attached to the cringles of a sail, by which it is bent or reefed. They are called *head* or *reef* earings according to the particular cringles for which they are used. See *Cringles* (*Earing*).

EASE *the Ship*. When a vessel is sailing close-hauled, *to ease her*, implies to let her head fall off a little so as to meet a coming wave with less resistance: this is done by giving the helm freedom.

See also the article *Steam-ship*.

EASE AWAY or EASE OFF. To slacken out a rope or tackle.

EASE OFF *a sheet*. See *Aft*.

EASTING. See *Northing*.

EBB. See *Tide*.

ECCENTRIC, and ECCENTRIC-ROD. See description of *Steam-Engine*, Sect. 31, 32, and 36.

ECLIPTIC, in astronomy, that great circle in the heavens which, by the motion of the earth in its orbit, the sun appears to describe in the course of a year. It is inclined to the equinoctial at an angle of nearly 23° 28′, called the *obliquity of the ecliptic*, and cuts it in two points diametrically opposite to each other, called the *equinoctial points*. The time when the sun enters each of these points (which occurs about the 20th of March, and 23d of September, respectively) is termed the *equinox*—day and night being then equal; at these periods, especially about the time of the vernal equinox, storms called the *equinoctial gales* are prevalent in many parts of the globe. Those two points of the ecliptic which are each 90° distant from the equinoctial points, are called the *solstitial points*. That great circle which passes through the equinoctial points and the poles of the earth is called the *equinoctial colure;* and that which passes through the solstitial points and the poles of the earth, the *solstitial colure*. See *Zodiac*. (*Norie's Epitome of Navigation and Nautical Astronomy*).

EDGE-AWAY. To sail a little larger when running free.

To edge down on any object, is to approach it in an oblique direction.

ELBOW *in the Hawse.* See *Hawse.*

ELEVATION, or SHEER-DRAUGHT. See *Shipbuilding.*

EMBARGO. A temporary injunction by the government of a country to prohibit the sailing of ships from any port or ports.

The risk of embargo is included in a policy of marine insurance under the head "arrests and restraints of princes, &c." But while British subjects insured in this country are protected against the acts of the British or any other government (*Page v. Thomson, sittings after Hil.* 1804 *at Guildhall),* a foreigner would not recover from underwriters here, without express stipulation, for loss occasioned in such a way through the acts of his own government, seeing that he himself is to be held as a party to these acts *(Conway* v. *Gray,* 10 *East.* 536. *Simeon* v. *Bazett,* 2 *M. and S.* 94*).* A British merchant also would not be held answerable for loss or damage happening to a foreign ship in consequence of an embargo laid on by the British government, an insurance for the benefit of a foreigner against the effects of such an embargo being deemed illegal, (*Touteng* v. *Hubbard,* 3 *Bos. and Pull.* 291.

It has been decided that the expense of wages and provisions during the detention of a ship by embargo fall upon the owners. (*Da Costa* v. *Newnham,* 2 *Term Rep. in K. B. p.* 407. *Shee's edition of Tenterden,* page 499).

The breach of an embargo, if done with the knowledge of the insured, discharges the underwriter from liability ; if done without his knowledge, it would amount to barratry of the master. (*Robertson* v. *Ewer,* 1 *T. R.* 127. See Hildyard's edition of *Park on Insurance.*)

EMBARK. To go on board, or to put on board of a vessel. *Embarkation* is a term more particularly applied to the shipping of troops and naval stores.

EMBAYED. A vessel is said to be embayed, when the wind is blowing right into a bay, and she is so far within it as to be unable to weather either of its points.

END FOR END. A term applied to a rope, or to any article such as a log of timber, a spar, a cask, &c., being re-

versed or turned about so that the one end occupies the place which the other did before.

ENGINE (Marine). See *Steam Engine.*

ENGINE-BEARERS. The same as *Sleepers.*

ENGINEERS, in the Royal Steam Navy, that is to say, the men who superintend the steam-engines on board the Government steamers, are appointed by warrant from the Lords Commissioners of the Admiralty, and are distributed into three classes: "As a general rule, the third class engineers require to serve three years before they can present themselves for examination for the second class, and the second class in like manner require three years service before being examined for the first class. But the examining officers may, if they see cause, restrict this period by a note on the passing certificate, which will render the engineer eligible for examination and promotion in less than three years, if his subsequent conduct appear to merit it." An engineer of any class is required to be acquainted with the principles of marine engines, with the names and uses of all their parts, and to be capable of working them. The first-class engineers more especially must be able "to set right any defects which may arise, to adjust the lengths of the various rods and motions, slide-valves, eccentrics, &c., and to make rough sketches, with the requisite dimensions fit to work from, of every part of an engine,—as well as to keep accounts and to make notes in the log book of all particulars in regard to the working of the machinery." Those of the first and second classes have also to take charge of the engineer's boys. "No person who has not served as a third class engineer in the royal steam navy will be considered eligible for a second class engineer without having served at sea as an engineer, nor for the first class, without having served as chief engineer of a sea-going steam vessel."

ENSIGN. The flag worn at the stern of a vessel, to denote what nation she belongs to. In a ship of war, the British Ensign is hoisted on a staff, called the Ensign-Staff, shipped on the taffrail, and inclining over the stern.

ENTRANCE. The lower part of a vessel's bottom next the stem.

EPHEMERIS (Astronomical). See *Nautical Almanac.*

EQUATOR. A great circle on the earth (sometimes also called the *Equinoctial Line,* or simply the *Line*) equally distant from the poles; it divides the globe into two equal parts, the *Northern Hemisphere* and the *Southern Hemisphere.* The plane of the Equator extended to the heavens forms a circle called the *Celestial Equator* or the *Equinoctial,* which in like manner divides the heavens into two equal parts, the Northern and Southern Hemispheres. *(Norie's Epitome).*

EQUINOCTIAL. See *Equator.*

EQUINOCTIAL POINTS. See *Ecliptic.*

EQUINOX. See *Ecliptic.*

EQUIP. To fit out a ship, whether for a voyage or for war.

ESCAPE-VALVES (Cylinder). See description of *Steam Engine,* sect. 6.

EUPHROE, or UVRON. See *Awning.*

EVEN-KEEL. When a vessel's draught of water is the same at the bow as at the stern, she is said to be *on an even keel.*

EXCHANGE. A term employed by merchants to designate both the bills or negotiable instruments by which remittances are made from one country to another without the transmission of money; and the varying price or "course" of such instruments in the market.

"*Waterston's Manual of Commerce*" contains, along with other matter, useful and conveniently arranged information as to exchanges, as well as in regard to the weights and measures of foreign countries. *Steel's Shipmaster's Assistant* is also a valuable book of reference on the subject.

EXPANSION-VALVE. See description of *Steam Engine,* sect. 20.

EYES OF THE RIGGING. The circular parts of the shrouds which are formed like a collar to go over the mast. The eyes of *stays* are termed *collars.*

FLEMISH EYE or *Made Eye.* An eye formed by opening

the strands of a rope's end, dividing them into two parts, laying them over each other, and marling, parcelling, and serving them together.

Lashing Eye. A spliced eye made on the end or ends of any rope, for a lashing being rove through in order to set it tight.

Spliced Eye, or *Eye-splice.* An eye formed by turning the end of a rope back, opening the strands, and splicing it by putting them through the strands of the standing part.

EYELET-HOLES. Holes made in a sail for the robands to go through, in order to bend it to its yard or boom, or to reef it.

FACING, in shipbuilding, implies letting one piece of timber on to another, to give it additional strength or finish.

FACTOR. A commercial agent residing at a distance from his principal, of some part of whose trade he has the superintendence. He is paid by a percentage (termed *factorage* or commission) on the price of the goods which he sells or buys. It being common for a factor to advance money on goods sent or consigned to him, he is held to have a special property in such goods, and a general lien upon them. He may accordingly sell in his own name.

An abridgement of the factor's act, 6 George IV., c. 94, amended by 5 and 6 Vict., c. 107, may be seen in *M'Culloch's Dictionary,* or *Waterston's Cyclopœdia of Commerce.*

FAG. A rope is *fagged,* when the end is untwisted.

Fag-end. The extreme end of a rope, more particularly when it has become untwisted.

FAIR, in shipbuilding, denotes the evenness or regularity of a curve or line. Applied to the wind, it signifies favourable, as opposed to *foul.* A rope is said to *lead fair,* when it moves freely through a block or the like.

To fair a ship, means to chip the timbers fair.

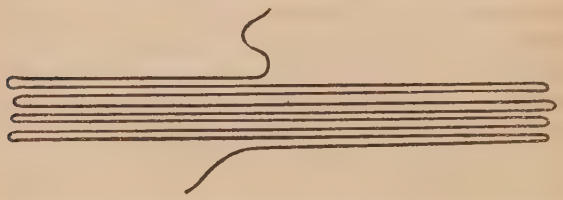
FAIRLEADER. A strip of board or plank, with holes in it, or a thimble, for running rigging or any rope to lead through, in order to keep it clear.

FAIRWAY. A navigable channel.

PILOTS-FAIRWAY. See *Pilot.*

FAKE. A single coil of a rope.

FRENCH-FAKE. If a rope be laid in this manner,



it is termed a *French Fake,* which method is adopted, when the rope has to be let go suddenly, in order to allow it to run freely, without the parts getting foul of each other.

FALL. See *Tackle.*

CAT-FALL. See *Cathead.*

FALL-ABOARD OF. To strike or encounter another vessel.

FALL-ASTERN. See *Astern.*

FALLING HOME. The same as *Tumbling Home.*

FALLING OFF. When, in sailing by the wind, the vessel's head falls away to leeward. This is the opposite of *Coming up to the wind,* or *Griping.*

FALSE-KEEL. See *Keel.*

FALSE-RAIL. See *Head-Rail.*

FALSE-STEM. The same as *Cutwater.*

FALSE-STERN-POST. See *Stern-post.*

FANCY-LINE. A line used for overhauling the lee topping-lift of the main or spanker boom.

Also, cord laid up neatly (braided or otherwise) for sash windows, &c.

FANG. See *Fetch the pump.*

FANNING BREEZE. "A wind just sufficient to cause the light sails of a vessel to swell and collapse under the double influence of the air and the motion of the hull."

FASHION-PIECES or FASHION-TIMBERS. Two timbers in the run of a vessel. They are united one to each end of the transoms, to terminate the breadth and form the shape of the stern frame. (Plate II. fig. 5).

FAST. A rope or chain by which a vessel is secured to a wharf or quay. They are called *bow*, *head*, *quarter*, and *stern* fasts, according to the part of the vessel to which they are attached. A *breast-fast* is one which of itself confines the ship's broadside to the wharf.

MAKE FAST. The same as to fasten; it is most frequently expressed of tying or securing *ropes*.

FATHOM. A measure of six feet, used to shew the length of chain, cordage, &c., and also the depth of water.

FAY, in shipbuilding, to join two pieces of wood closely together; as, a vessel's planking to the timbers.

FEATHER-EDGED, expresses that a plank has one edge thicker than the other.

FEATHER AN OAR. See *Oar*.

FEED-PUMP. See description of *Steam-Engine*, Sect. 19, 25, and 39.

FELT. Stuff made of wool or hair, or of both, and tarred over: it is used to lay inside of doubling, or of copper or wood sheathing, on a vessel's bottom. In the case of old ships, this kind of felt is, from its flexibility, peculiarly serviceable by seeking in and filling up crevices, should the vessel be strained. There is also a kind of felt called the *Patent Asphalted Felt* (manufactured by Messrs F. M'Neill, & Co., London) which is of a stronger, closer, and more fibrous texture than the former: owing to this firmness of texture, and its evenness of surface, it is well suited to prevent puckering in the nailing on of copper. There is another description of a thicker quality, adapted for use under wood sheathing; but for this purpose hair felt is preferable.

Felt has the property of resisting the worm, and it prevents the heat of the sun, in tropical climates, from opening or rending the planks under the copper sheathing.

Messrs M'Neill & Co.'s *Dry Hair Felt* is used for covering the boilers, pipes, and cylinders of steam-engines, and from its non-conducting property effects a considerable saving of fuel. It is also employed for lining the bulkheads of steamers and other vessels, in order to intercept heat or deaden sound.

FELUCCA. A small vessel with oars and sails, common on the coasts of the Mediteranean.

FEND-OFF. To push or press off, in order to avoid violent contact.

FENDERS. Pieces of wood, rope, or other material, hung over the side of a ship or boat, to protect it from being chafed.

FETCH. To reach; as to *fetch the harbour*, or to *fetch to windward of a point.*

To fetch headway, or *sternway*, is expressed of a vessel acquiring motion ahead or astern.

When any object in a vessel gets loose from its lashings, it is said to *fetch way.*

FETCH *the Pump:* to pour water above the pump-boxes (when they are dry, and the pump will in consequence not draw, or, as its termed, "has lost its fang,") and work the upper box up and down by means of the brake, till the air, ascending through the water, is expelled from beneath, and the water in the well, following it to supply the vacuum, rises through the valves of the pump-boxes and so enables the pump to work.

FID or FIDD. A piece of wood or iron made to go through the heel of an upper mast, and resting on the trestle trees, to keep the mast in its place. *The Patent Screw Fid* (by Messrs Pearce & Gardiner, Liverpool) is highly recommended, as it allows the tension of the rigging to be adjusted without taking in sail, and the upper masts to be struck and replaced without casting off or slacking any part of the rigging: it is an iron fid with screws through each end, which work in a plate (having steel sockets) fastened to the upper edge of the trestle trees.

Also, a tapered wooden pin used to open the strands in splicing large ropes—to open the eyes of ropes—and for like purposes; this gets the name of a *Splicing-fid.*

FIDDLE-BLOCK. See *Block.*

FIDDLE-HEAD. See *Head.*

FIFE RAIL. A curved rail fixed on the head of stanchions, encircling a vessel's main-mast and pumps.

Jackspins are inserted into it for belaying running rigging.

FIGURE or FIGURE-HEAD. See *Head* and *Cutwater.*

FILL. To adjust a vessel's sails so that the wind may force her ahead. The reverse of this is *Backing.*

See *Back* and *Fill.*

FILLING, in shipbuilding, a piece of wood fitted on a timber, or elsewhere, to make up a want or defect, particularly to supply the deficiency of the timber in the moulding way. The timber should not have fillings when it can be avoided, especially on the outside. The name of Fillings is sometimes given to *Chocks,* which see.

Beam-fillings, for timber laden ships, are short lengths of wood cut to go between the beams, in order to fill up the stowage, and reaching a little above them, so as to prevent the weight of the cargo between decks from resting upon the beams.

FILLING-TIMBERS, or FILLING-IN-TIMBERS. See *Frames.*

FILLING-ROOMS. A small place in the magazine of a ship of war, wherein the spare powder may be started loosely in order to fill cartridges. *(Shipwright's Vade Mecum).*

In bomb vessels there is a similar place for preparing the shells and cutting the fuses.

FILTER. A strainer for passing (or, as it is termed, *filtering*) water or any other fluid through, to free it of its impurities. These machines are very useful at sea, particularly in long voyages, should the water get foul.

The self-acting filters, which may be introduced into a vessel's scuttled-butt, or into the service tanks of passenger ships, and are so constructed that the water is filtered before running off, are especially suitable for use at sea.

FILTERING-STONE. A soft white stone hollowed out to receive water which is filtered through its pores. Among seamen it also gets the name of a *Drip-stone.*

FIRE-BOOMS. Long-booms fitted with a gooseneck to ship into a bolt in the lower part of a vessel's wales, their ends reaching down nearly to the water's edge, and formed

with open prongs, through which a rope is rove and carried round the vessel in order to prevent the boats of an enemy from getting alongside at night.

FIRE-SHIPS. Vessels filled with combustible matter to be set on fire in order to destroy an enemy's vessels. *Fire-rafts* are used by the Chinese, in their rivers, for the same purpose.

FIRE-SWAB. See *Tompion.*

FISH. A piece of hard wood fastened with bolts and hoops to any spar for the purpose of strengthening or securing it. This operation is called *fishing* the spar.

FISH THE ANCHOR. To raise the flukes of the anchor up to the gunwale after it has been catted. The tackle used for this purpose is called the *fish-tackle,* to which there is attached a pendant, having a large iron hook, termed the *fish-hook,* made fast to its end.

FISH-DAVIT. See *Davit.*

FISH-HOOK. See *Fish the Anchor.*

FISH-ROOM, in a ship of war, the space between the after-hold and the spirit room. It is now used chiefly for storing lumber.

FISH-TACKLE. See *Fish the Anchor.*

FIT-OUT A SHIP: to provide her complement of men, and supply every thing necessary to put her in a proper condition for proceeding to sea. See *Outfit.*

FIT-ROD. A small iron rod with a hook on the end: it is used for being inserted into the holes made in a vessel's sides, in order to ascertain the required length of the bolts or treenails which are to be driven in.

FLAG. A general name for the distinguishing colours of any nation. The statute 4 and 5 Will. IV. c. 13, prohibits any of Her Majesty's subjects from hoisting the Union Jack in their vessels, or any pendants, &c. usually worn by ships in the Royal Navy, or any flag whatever resembling those of Her Majesty, or any ensigns or colours whatever other than those prescribed by proclamation 1st January 1801, under a penalty not exceeding £500. See *Admiral.*

There are also small flags used for signals or telegraphs.

FLAG–OFFICER. A distinguishing title for an Admiral, a Vice-Admiral, or Rear-Admiral. His vessel is called a *Flag-ship.*

FLANCHING, or FLANCHING OUT, in shipbuilding, the same as *flaring*, that is to say bellying out.

FLANGE. A projecting rim formed on the end of each of two pipes for the purpose of uniting them. The rims formed on the ends of a steam cylinder, for bolting it to the engine bottom and to the cylinder cover, are also called *Flanges.*

PORT-FLANGE, in shipbuilding, a piece of wood fixed on the ship's side over a port, to prevent water or dirt from going into the port when open.

FLARING, FLARING OFF, or FLARING OUT. The reverse of *tumbling home.*

FLAT, in shipbuilding, a straight part in a curve. *To flat in*, or *to flatten, a sail*, is to haul its clue or sheet aft.

FLAT–BOTTOMED. A term implying that a vessel's bottom does not rise or has little upward inclination.

FLATTEN. See *Flat in.*

FLEET. A general name given to the royal navy, or to any part of it employed in a particular service or expedition.

Also, a number of merchant vessels sailing in company.

TO FLEET. To "come up" a tackle, and draw the blocks apart, for another pull, after they have been hauled chock-a-block, that is to say, after the blocks forming the purchase have been hauled close together.

Also, "to shift the position of a block or fall, &c., so as to haul to more advantage", (*Dana's Seaman's Manual*).

FLEMISH-COIL. See *Coil.*

FLEMISH-EYE. See *Eye.*

FLEMISH-HORSE. See *Horse.*

FLENSING. The operation of clearing a whale of its blubber and bone. In the northern whale fisheries, the man who directs the cutting operations is called the *specksioneer*: the *speck-falls*, whereof there are two, for hoisting the blubber and bone off the whale, are ropes rove through two blocks

made fast to the *blubber-guy,* which is a large rope stretched from the main to the fore mast head.

The *Cant* (or "*Kent*") *purchase* is formed by a block suspended from the mainmast head, and another block which is made fast to a circle called the *Cant,* cut in the whale between the neck and fins: it is used to cant the fish round during the above operation.

The blubber, on being hoisted on board the vessel, is cut into square pieces and stowed in the hold; afterwards, these are again taken on deck, skinned, cleared of any *Kreng* (that is, any useless part of the carcase) which adheres to them, and cut into smaller pieces to be stowed away in casks: this latter process is termed *making-off.*

For more minute details on this subject, and in regard to the mode of flensing adopted in the southern whale fisheries, reference may be made to Captain Scoresby's valuable "*Account of the Arctic Regions and Northern Whale Fishery,*" and the Appendix thereto.

FLOATING-ANCHOR. A machine contrived to prevent a vessel from driving rapidly where there is no anchoring ground. This might be peculiarly serviceable in the case of her being disabled about the masts, and thereby rendered unable to keep off a lee shore.

The following description of it is adjusted from "*Seamanship both in Theory and Practice,*" wherein a plate of the machine is given. It consists of two flat bars of iron, each in length about half the breadth of the midship-frame of the vessel for which it is used: these bars are connected together in the middle by means of a bolt. When intended to be used, the bars are swivelled at right angles to each other, and kept so by a swifter of rope or small chain passed through a hole in the end of each bar, which swifter must be hove tight. To it there is marled a double fold of No. 1 canvass, laid on that side which is next the ship when the machine is used. In each bar there are two holes at equal distances from the centre, and in these holes the ends of two pieces of rope are made fast, their bights being seized in the middle, so as to form a crowfoot, with an eye in the centre, which is

well served with spun yarn ; to this, when the anchor is used, there is bent a hawser, by which it is made to sink and incline in the water. In the end of one of the bars is fitted an iron ring, to which a buoy is made fast by a rope about twelve fathoms long, to prevent the anchor from sinking too deep. When it is thrown overboard, the hawser, and a rope made fast to the head of the buoy, are veered away sufficiently to ride the vessel. To get it on board, haul on the buoy-rope, which will bring it to the water's surface so as to be easily drawn to the ship.

FLOE. See *Iceberg.*

FLOOD, and FLOOD-MARK. See *Tide.*

FLOOR. The bottom of a vessel on each side of the keelson. In the midship body, the flattest part of the floor is at the flat frame called the midship-frame.

The *floor-timbers* are, by way of abbreviation, called the "floors." In this sense, the RISING-FLOORS imply those floor-timbers which rise gradually from the plane of the midship-floor, so as to sharpen the form of the vessel towards the bow and the stern.

FLOOR-PLAN, or *Half-breadth-plan.* See *Shipbuilding.*

FLOOR-GUIDE. See *Ribbands.*

FLOOR-HEADS. The upper extremities of a vessel's floor-timbers.

FLOOR-RIBBAND. See *Ribband.*

FLOOR-TIMBERS or *Floors.* Large and strong pieces of timber placed across a vessel's keel at right angles to it, forming the lower structure of the frame. (Plate II, Fig. 6). See the articles *Frame* and *Keelson.*

FLOTILLA. A fleet of small vessels.

FLOTSAM, JETSAM, and LAGAN. See *Derelict.*

FLOW. See *Tide.*

FLOWING-SHEET. When a vessel has the wind free or large, and the lee clues eased off, she is said *to sail with a flowing-sheet.*

FLUES (Boiler). See description of *Steam-Engine,* sect. 37.

FLUKE. See description of *Anchor.*

FLUSH. With a continuous even surface; thus, *a flush deck* is one which stretches fore and aft upon one line, without any falls or intervals.

FLY. The length of a flag from the staff to the outer edge. If a union flag, it is that part which extends from the union to the extreme end.

The opposite of this, or rather the breadth of a flag next the staff, is called its *hoist*.

Fly *of the Compass*. See description of that instrument.

FLY ABOUT. See *Chop About*.

FLY-BOAT. A name sometimes given to a swift canal passage-boat.

FLY-BY-NIGHT. A name given in some places to a square-sail, like a studding-sail, used in sloops when running before the wind. It is set on the topmast, having its foot stretched to the cross-jack-yard.

FLY-UP, in shipbuilding, a term similar to *flight*, implying a sudden deviation upwards from a sheer line: as, that of the after ends of the wales in a square-sterned vessel.

FLYING-JIB. See *Jib*.

FOG-BANK. A dense mass of fog, presenting the appearance of a thick cloud resting upon the horizon.

FOOT-ROPES. Ropes stretching from the middle of a yard to each of its extremities, for men to stand on when reefing, furling, &c.: they were formerly termed *Horses*. In order to keep them more nearly parallel with the yard, they are suspended from it at convenient distances by short pieces of rope called *Stirrups*, each of these having a thimble spliced into its lower end, through which the foot-rope is rove. There is likewise a foot-rope beneath the jib-boom. See the articles *Horse* and *Boltrope*.

FOOT-VALVE. See description of *Steam-Engine*, sect. 15.

FOOTWALING. See *Ceiling*.

FORE. A term used to distinguish that part of a vessel at or near her bow, or things in that direction, in opposition to *aft* or *after*.

FORE-AND-AFT. Lengthways of the vessel, as opposed to athwartships. See *Sails*.

FORE-BODY. See *Shipbuilding.*

FORECASTLE, or FORECASTLE-DECK. The fore part of the upper deck at a vessel's bows. In a merchantman, the forecastle more properly implies the fore part of the vessel under the deck wherein are the sailors' berths.

If there be a sort of cabin formed by a short deck raised above the forecastle-deck, it gets the name of a *Topgallant Forecastle.*

FOREFOOT. The lower part of the cutwater, and fore end of a vessels's keel which is covered in by it.

FORE-GANGER, or *Fore-goer.* See description of *Harpoon.*

FORE-HOODS. The foremost of the outside and inside planks of a vessel.

FORE-HOOKS. The same as *Breast-Hooks.*

FORE-LOCK. A flat piece of iron which is driven through a hole in the end of a bolt to prevent it from drawing. A bolt when secured in this way, is said to be *forelocked.*

Spring Fore-Locks, or (as they are sometimes termed) *split fore-locks,* are split at their points, thereby forming springs to prevent their coming out.

FORE-MAST. See *Mast.*

FORE-MAST MEN, or MEN BEFORE THE MAST. A name given to the common sailors, distinguishing them from the officers on board of any vessel.

FORE-PEAK. The contracted part of a vessel's hold, close to the bow. That part which is close to the stern is called the *after-peak.*

FORE-REACH. To shoot ahead, when sailing on a wind. Thus, one vessel is said to fore-reach on another, when she is sailing faster on a wind. Again, if in lying-to, a vessel's head tends to come up in the wind, it is necessary to adjust the sail, or sails, so as to make her "fore-reach," that is, to gain a little additional headway, and thereby increase the power of the helm.

FORE-SHEET-HORSE. See *Horse.*

FORGE-A-HEAD. To shoot ahead when at anchor.

FORMER, in gunnery, a round flat piece of wood with a

hole in its centre, of the same size with the bore of the gun, used for making wads. There are likewise cylindrical pieces of wood called *formers*, used for rolling cartridges upon, to fit the piece for which the cartridges are intended.

FORTIFYING. The operation of strengthening a ship's stem and bows, by the application of double planks, as well as strong chocks or knees of wood, bolted securely to the stem, and to the bow plank and timbers, outside, and cased over with thick iron plates, the inside being also strongly secured by additional breast-hooks, and additional beams (called ice-beams) connected with a number of cross riders, pointers, and stanchions; the whole of these properly fitted and bolted firmly together, render the bow almost impregnable. This system is adopted for all ships employed in the northern whale fishery, to enable them to withstand the concussion and pressure of ice. See *Doubling*.

FORWARD. Towards or in the fore part of a vessel.

FOTHER. To draw a sail, with tarred oakum spread over one side of it, beneath a vessel's bottom, in order to stop a leak.

FOUL. *A rope is said to be foul*, when it is entangled, or obstructed. *The bottom of the water is foul*, when it abounds with rocks, or shoals. In these senses, *clear* is the opposite term. See also *Fair*.

FOUNDER. A vessel *founders*, when she sinks at sea by filling with water.

FOX. A seizing made by twisting together two or more short lengths of ropeyarn together with the hand.

"*A Spanish fox* is made by untwisting a single yarn, and laying it up the contrary way." *(Dana's Seaman's Manual.)*

FOXEY, implies "a defect in timber of a reddish cast or hue, arising from over age or other causes." *(Shipwright's Vade Mecum.)*

FRAME *of Marine Engine.* See description of *Steam Engine*, sect. 34.

FRAMES, or Frame-Timbers, in shipbuilding, the floor timbers, futtocks, and top-timbers, which, after being moulded, fitted, and bolted together, compose what is termed

the *frame*. These are placed upon the keel at right angles to it, and form the bottom and sides of the ship. The floor-timbers are securely bolted down to the keel.

Filling-in Timbers, are those timbers which are introduced, in some vessels, between the frames, for the purpose of making a solid framing. In steamers, the framing is made quite compact, sometimes as high as the light-water mark, and is caulked outside and inside, so as to bind it firmly, and make it water-tight independent of the planking; the whole being secured by fore-and-aft bolting, affords, along with the main keelson and additional keelsons, a substantial basis for the engines and boilers, at the same time presenting an efficient resistance to the strain and vibration of the machinery.

BALANCE FRAMES. Those frames of an equal capacity, or area, which are equally distant from the ship's centre of gravity.

MIDSHIP-FRAME. } See those articles respectively.
SQUARE-FRAMES. }

FRAMING and WARPING the TIMBERS, in shipbuilding, implies putting in the beams knees, coamings, &c., and dividing the spaces between the beams into equal parts (perhaps three or four) from side to side of the vessel, by fitting fore-and-aft pieces, termed *carlings*, between the beams.

FRAP. To pass ropes round a sail, in order to prevent it from blowing loose. To draw ropes or chains round a vessel which is weakened, in order to keep her together. To secure the ropes of a tackle together, by means of spun-yarn, rope-yarn, or any lashing wound around them.

FREE. *A vessel is going free*, when she is not close-hauled, but sailing with her head somewhat farther off the wind; if the wind be abaft the beam, she is going *large*.

A vessel is said to be free, when the water is pumped out of her; and pumping *frees the ship*, when it discharges more water than what leaks into her.

FREIGHT. The sum agreed on between a shipowner and merchant to be paid for the use of a vessel in conveying goods. The term freight is sometimes used to imply the

lading itself; in the present article we are to treat of it in the former sense. *To freight a vessel* means to employ her for the carriage of goods, or of goods and passengers.

If, in a charter party, the stipulated payment be a gross sum for the entire ship, that sum will be payable by the merchant though he have not fully laden her. If the stipulation be to pay a certain sum for every ton of the ship's burden, or to load a full and complete cargo, the merchant will be liable for freight according to the proper number of tons which she is proved capable of containing. The sum that he may thus be called upon to pay for goods which have failed to be shipped is termed DEAD-FREIGHT; in fixing the amount whereof, allowance is made for any freight earned by conveying the goods of other persons in lieu of them. When a shipmaster finds it proper to proceed with an incomplete lading, it seems requisite that he should protest against the shipper or his agents.

When a vessel is chartered, the freight to be earned is insurable while she is proceeding to the port at which she is to receive her cargo, *(Thomson* v. *Taylor,* 6 *T. R.* 478*)*. In the case of a vessel being lost while taking in her cargo, the shipowner, though fully insured, is entitled to recover the freight only of such goods as were actually on board at the time of the loss, unless the ship be chartered, *(Forbes* v. *Aspinall,* 13 *East,* 323*)*, or where there is a verbal or written contract to provide a full cargo, the goods also being ready to be put on board, and the ship ready to receive them, *(Patrick* v. *Eames,* 3 *Camp.* 441, *Park on Insurance,* 56–58*)*: farther, the ship has been held as being in readiness to receive her cargo, though wrecked in the act of being taken out of dock for that purpose, *(Devaux* v. *L'Anson,* 7 *Scott* 507*:* 5 *B. N. c.* 519*)*. In the case last quoted, it was held that the shipowner may insure as freight the profit which he expects to make by conveying his own goods.

The master has a lien on the respective parcels of goods shipped, for the freight due thereon: that is to say, he is not bound to part with any parcel of goods till the freight of it be paid or tendered, unless this right be excluded by

special agreement, by the stipulated mode of payment, or otherwise, *(Soldergreen* v. *Flights, &c., Guild Hall Sitt. T. T.* 1796). Where this right of retention requires to be exercised, his duty is to deliver the goods to the charge of some wharfinger or warehouseman, to be detained in his custody till payment is made of the freight and charges. There is no lien on the goods shipped, for dead-freight, *(Birkley* v. *Gladstone,* 3 *M. and S.* 205*)*.

Although goods be delivered at their port of destination in a damaged condition, the merchant is liable for their freight: but if the deterioration have arisen through the fault of the master or mariners, he is entitled to satisfaction from the master or shipowner for such damage. The loss of freight by leakage caused by perils of the sea forms a proper claim against underwriters. (But see the article *Leakage*). If goods be jettisoned, or if they be sold at an intermediate port, (that is to say, a foreign port into which the ship has put in distress during the course of a voyage), either to raise money, which could not be otherwise obtained, for the purpose of refitting the ship, or because the goods had received damage which would increase to excess were they forwarded to their destination, the full freight thereof is made good to the shipowner. See the article *Cargo.*

As a general rule, and in the absence of express stipulation, no freight is due, unless the voyage be completed and the cargo delivered. When a vessel is wrecked or irreparably damaged, and the cargo or part of it is saved, the master may forward it by another vessel; and if this be done, or if the merchant interfere to prevent its being so forwarded, full freight will be due. If goods have been saved and sent forward in this way, the practice is to make the goods, and the net freight which is earned, contribute proportionally to the expenses of saving and recovering them, so far as these expenses do not arise from steps taken for the mutual preservation of ship and cargo, and to state the charges of forwarding the goods against the underwriters on freight. The master *may* tranship, but he is not bound to do so. (See the case of the "*Gratitudine,*" 3 *Rob. Adm. Rep.*

240): if, (says Mr Richards of Lloyds), he can tranship at a less charge than the original freight, by which of course there would be a saving thereon, it would appear that in justice to the underwriters on freight he is bound to do so; but if the new freight and relative expenses are likely to exceed the original freight, he would not tranship the cargo on his own account, but for the proprietors of the goods, and the underwriters on the goods are then chargeable with the surplus cost of forwarding them.

Under this head special reference is to be made to *Holt's Shipping and Navigation laws, Hildyard's edition of Park on Insurance,* and *Sergeant Shee's edition of Tenterden's Treatise of the Law relative to Merchant Ships and Seamen.*

FREIGHTER. The party who hires a vessel, or part of a vessel, for the carriage of goods.

FRENCH FAKE. See *Fake.*

FRESH. *A fresh breeze,* implies a wind in which a vessel may safely carry all her canvass; *a stiff breeze,* implies one somewhat stronger than this, but not so violent as a gale.

A vessel is said to have fresh way, when she moves with speed, or with increased speed, through the water.

FRESHEN. To relieve a rope by altering the position of that part which had been exposed to friction: thus, *to freshen the nip of a stay,* or *of a rope cable,* is to shift it in order to prevent its being chafed through; *to freshen the hawse,* means to veer out or heave in a little of the cable of a vessel at anchor, so as to let another part of it bear the stress at the hawse-hole. *When the wind increases,* it is said to freshen.

FRIGATE. A particular kind of ship of war, constructed with a special view to swiftness of sailing, and therefore well adapted for cruising. These vessels mount from thirty-two to fifty guns, which are carried on the main-deck, quarter-deck, and forecastle.

Doubled-banked Frigates, or *Double-bankers,* are such as carry guns on two decks, having no elevation at the quarter-deck or forecastle, but the tier of guns on the upper-deck being uninterrupted, except generally at the gangways.

Seventy-four gun ships have been sometimes razeed and converted into double-banked frigates.

Steam-Frigates are large armed steam-ships, with a battery on a flush upper-deck, including four or more heavy pivot-guns, adapted to throw both shot and shells to a great distance: like a frigate, they have also a tier of guns on their lower or main deck, and are generally commanded by a Captain of the Royal Navy.

FRIGATE-BUILT. A term applied to a merchant vessel whose decks are ranged similarly to those of a frigate.

FULL. The state of a vessel's sails when filled with the wind so as to carry her a-head: if filled aback, they are said to be *flat a-back*. See also *Lean*.

FULL and BY. The same as *close-hauled*: that is, when a vessel keeps as close to the wind as can be done without shaking the sails.

FUMIGATION LAMP. A kind of lamp (described in *Dr. Burney's edition of Falconer's Marine Dictionary,)* invented for the purpose of purifying the air of close or infected places, and which is peculiarly serviceable in Hospital ships.

FUNNEL. An iron tube used as a chimney for carrying off the smoke from a vessel's cook-house. Also, the cylindrical stalk for the furnaces of a steam-ship; this is secured by ropes or chains, called the *funnel-stays,* leading from eye-plates near the top of the funnel to the ship's sides: see description of *Steam-Engine*, sect. 38.

FURL. To roll up and bind a sail upon its yard or boom.

FURRENS, in shipbuilding, a term sometimes used to imply the same as *Fillings*; that is to say, pieces supplying the deficiency of timber in the moulding way.

FUTTOCKS or FUTTOCK-TIMBERS. As already explained, a vessel's floor-timbers are laid across the keel: the frame-timbers fitted on the ends of these are called *second futtocks*, and between the floor-timbers there are timbers called *first futtocks,* which come down almost to the keel on each side; the timber above each of the first futtocks is cal-

led a *top-timber* or *long top-timber*, and that above each of the second futtocks a *short top-timber* or *lengthening-piece.* In large ships there may be *a third* and *a fifth* futtock introduced between the first futtock and long top-timber; and *a fourth* and *a sixth* futtock between the second futtock and lengthening-piece. (Plate II. Fig. 6.)

The whole of these timbers ought to be properly shifted, and they compose what is termed the *Frame* of the ship.

Futtock-Plank. See *Limber-strake.*

FUTTOCK-HOLES. See *Futtock-shrouds.*

FUTTOCK-PLATES. Iron plates crossing the sides of the top-rim perpendicularly at the outer end of a vessel's cross-trees. The dead-eyes of the topmast rigging are fitted to their upper ends, and the *futtock-shrouds* to their lower ends.

FUTTOCK-SHROUDS. Short shrouds leading from the lower ends of the futtock-plates to a hoop of iron round the lower mast, a little below the top. They are often formed by a continuation of the topmast rigging coming down through holes in the top, called *futtock-holes.* See *Catharpins.*

FUTTOCK-STAFF. A short piece of wood or iron rod, seized across the upper part of a vessel's rigging, to keep the rigging fair aloft: it was formerly used to secure the catharpins.

GAB and Gab-Lever. See description of *Steam Engine,* sect. 32.

GABART. A long narrow flat vessel, or lighter, with a hatchway extending almost the length of her decks, sometimes fitted with one or two masts, which are made so that they may be lowered in passing under bridges. Gabarts are used chiefly in canals and in rivers.

GAFF. A spar to which the head of a fore-and-aft sail, such as a boom-mainsail, spanker, spencer, or trysail, is bent. (Plates III. and IV.)

GAFF-TOPSAIL. A light sail set on the topmast over a gaff, its foot being spread by the gaff. (Plates III. and IV.)

GAGE. [Gauge.]

GALE. "A wind not tempestuous, but stronger than a breeze." *(Johnson.)*

Gales, or *Gales of Wind,* are more particularly understood by mariners to be those storms which (chiefly during winter in high latitudes) blow sometimes from one direction for several days together. These (Mr Horsburgh notices in his *India Directory*), prevail mostly from the westward, and are not so liable to shift suddenly as the gales met with near the tropics, which are generally of short duration. It may be remarked, however, that in the Atlantic ocean, when the wind has been blowing heavily from the southward, it is very common for it to veer round suddenly to the westward.

Equinoctial Gales. See *Ecliptic.*

GALLERY. A projecting balcony on each of the quarters, and sometimes on the stern, of a large ship. They are often decorated with ornamental devices; some small vessels have imitation galleries on their quarters. The stern gallery of a large ship gets the name of the *balcony.*

GALLEY. The cook-house; or more properly the cook-room, or apartment either on deck or below, in which the cooking is carried on.

Also, a low flat-built vessel, worked with sails and oars, which has long been common in the Mediterranean. A person condemned to work at an oar in one of these vessels is called a *galley-slave.*

GALLIOT. A flat-bottomed vessel whose bow and stern are similar, being round and bluff. It is commonly fitted with lee-boards, and has two masts; the foremast, which is the tallest, is rigged like a sloop's mast, while the after mast carries a sail which, like the foresail, is also set upon a boom and gaff.

GALLOWS. A strong frame raised amidships to support spare spars, &c., in port. It consists of two *gallows bitts,* or "*gallows stanchions,*" and the *gallows top,* which is a cross piece of timber tenoned on to the top of the bitts. There are usually two of these frames in a vessel, one abaft the foremast, and another before the mainmast.

GAMMONING. The rope or chain lashing used to secure a vessel's bowsprit down towards the stem-head. It is generally made fast to a ring, called the *Gammon-shackle,* formed on the end of the *Gammon-plate,* which is an iron plate bolted to the stem.

Screw-Gammoning. A chain or plate for the above purpose, fastened by means of a screw. This is used in some coasters that have occasion to go through canals, for convenience in tracing up the bowsprit when required.

GANG. A certain number of a ship's company selected for a particular work or duty.

GANG-BOARD. A broad thick plank used for the convenience of getting into or out of a vessel, when she is alongside of a quay or elsewhere.

GANG-CASKS. See *Breakers.*

GANGWAY. That part of a vessel's side opposite to the main hatchway, where people pass into and out of the ship: the bulwark and rail at that part is sometimes made to ship and unship when required, to facilitate the shipping and discharging goods, &c., by the hatchway. The name *Gangway* is also given to a range of plank fenced with rails, laid between the quarter-deck or poop and forecastle, on each side of a deep waisted vessel, as well as to that which forms a communication between the paddle-boxes of a steam-ship; this latter (which is more generally called the *Bridge* or *Bridge-board*), being bolted and fastened with knees to the paddle-boxes, serves to lessen their vibration.

GANTLINE. See *Girtline.*

GARBOARD-STRAKE. See *Strake.*

GARLAND. An ornament decked with ribbons hoisted up between the masts of a North Sea whaler on the first of May, &c., or in a vessel of war on the occasion of a marriage.

Also, "a name for a large strop, or grommet, lashed to a spar when hoisting it on board of a vessel," *(Dana's Seaman's Manual).*

GARNET. A purchase made fast to a vessel's main-stay, for hoisting cargo.

See also *Clue-garnets* under explanation of *Clue-lines.*

GASKET. A plaited cord made with two or three yarn foxes, or with spun yarn, used to secure a sail to its yard or boom when furled. They are called bunt, quarter, or yard-arm gaskets according to their position on the yard.

GATHER AFT *a sheet:* to haul in the slack of it.

GAUB-LINE. [GOB-LINE].

GAUGE or GAGE. When one vessel is to windward of another, she is said to have the *weather gage* of such ship, if to leeward, the *lee gage.*

The depth of water that a vessel draws is sometimes termed her guage.

There are instruments called gauges contrived for measuring the depth of the sea, the height of tides, the force of the wind, &c., named respectively a *Sea-guage, Tide-guage, Wind-guage,* and so on, according to the purposes to which they are applied. We may notice, too, an instrument invented by M. Clement, and called a *Sillometre* or *Marine speed-guage,* which measures the speed of a vessel through the water, and (for convenient observation) is connected with a dial on deck. See also *Salinometer.*

A Shot-guage is a ring of iron, with a handle attached to it, for measuring the size of shot; it is numbered according to the calibre of the gun for which the shot is intended.

GAUGE-COCKS and MERCURIAL-GAUGE. See description of *Steam Engine,* Sect. 42 and 43.

GEAR. A term used to denote the ropes and blocks, &c, belonging to any particular sail or spar, as the *topsail-gear,* the *bowsprit-gear.* The *running-gear* denotes all the running rigging. We also speak of the *pump-gear,* which implies everything belonging to the pumps.

GEARING. A complication of wheels and pinions, or of shafts and pulleys, &c.

GENERAL SHIP. A vessel engaged to convey to a certain port or ports of destination, the goods of various merchants unconnected with each other.

GIG. A long narrow boat chiefly adapted for rowing expeditiously, and also furnished with sails. See *Boat.*

GIMBALS or JIMBALS. See description of the *Compass.*

GIRT. A vessel is said to be *girt*, when, in riding with two anchors out, a change of wind or tide causes her to swing round, and, owing to the cables being too taut, she is interrupted by one of them, which therefore requires to be slacked down in order to allow her to move over it.

GIRTLINE. A rope rove through a single block aloft, making a whip purchase, commonly used to hoist rigging by in fitting it, or to steady the head of a mast while swaying it up. It sometimes gets the name of a *gantline*, which perhaps would be more properly rendered *cantline*.

GIVE-WAY! An order to men in a boat to pull with greater force, or to commence pulling. The same as *Lay out on your oars*.

GLUE (Marine). An adhesive composition, invented by Mr Alfred Jeffrey of Limehouse, possessing properties most useful and important for shipbuilding and other purposes. From a series of experiments publicly made, it has been shown to possess the peculiar qualities required in a substance to be used for joining a vessel's timbers together: it is insoluble in water, and impervious thereto; elastic, so as to contract and expand according to the strain on the timber; sufficiently solid to fill up the joint and give strength; and it has great power of adhesion.

The following are the general instructions given by the patentee for its application to nautical purposes:

"*Strict attention must be paid to the melting of the Marine Glue.* Break or cut the glue into small pieces; melt it in a pitch pot over a *moderate* fire, (coke or charcoal is preferable); keep it *constantly* stirred all the time it is melting. When the glue, No. 3, is all melted, the heat is about 212° Fahrenheit, but much too thick to run down into the seams; it will therefore require boiling and stirring a few minutes longer, until the heat arrives at 300° Fahrenheit; it then becomes in a liquid state, and *should be used as quickly as possible*. Nos. 1 and 2 will not bear so much boiling as 3, 4, and 5. No more should be melted than is wanted to be used at one time, as frequent melting injures it. The safest way to melt it in large quantities, is in steam pans; and for small

quantities, by the common glue-kettle, using oil in the kettle instead of water, as oil produces a greater heat; and let the oil boil before putting the glue in the pan.

In paying the seams of ships it is used in the ordinary manner, but it is advisable to have the ladles made large, (holding about a quart), and with covers, so as to keep the glue *as warm as possible.* It is also recommended in laying new decks, to bevel the planks very slightly, instead of forcing open the seams with a caulking iron, and to counter-sink the planks to admit the nail heads. When oakum is used, which is always desirable, naphtha or coal oil should be used for dipping the caulking irons, as linseed oil prevents the glue from adhering to the edge of the plank. In paying old decks, the seams must be well cleaned out with a rase-hook, and the oakum hardened down so as to leave one or one-and-a-quarter inch for the glue.

In putting together a tenon and mortice, boards, &c., the joints must be warmed, then apply the glue with a stiff brush, giving an uniform thickness to each surface; afterwards expose them to a heated stove or fire, and when the glue is in a liquid state, unite them in the usual manner by rubbing, or rather pressing them together, leaving them for a time under a pressure.

In the construction of masts, or other large bodies, as the glue sets very rapidly, the operation of joining should be performed in a room heated to about 120° Fahrenheit; but should circumstances not allow of this, and the timbers to be joined are in the open air, or in a cold situation, the glue which has been spread on the surfaces should be again reduced to a liquid state, by means of hot irons or charcoal braziers, held a short distance from the surface. *The glue being insoluble in water, has no affinity for it, therefore a perfect contact cannot be formed with wet or damp substances. Dryness of the surfaces is absolutely necessary to obtain a perfect adhesion: oil, grease, dust, and dirt, must be avoided.*

If timbers become shaky in seasoning, first drive out the dirt or moisture in the shakes, and then run them full with the glue.

When the glue is used as a coating to prevent the admission of water or damp, or to prevent leakage in cisterns, tanks, or packing cases, &c., a glazed surface may be obtained by applying heat in the manner described for liquefying the glue in the joining of masts and other large timbers.

The marine glue being an elastic substance, always requires some slight fastenings, to take off the gravity of the timbers, and prevent sliding.

To render the marine glue more available in its application, various degrees of hardness and elasticity are made, viz.: No. 1, the hardest, being the most adhesive; No. 5, the softest, consequently the most elastic.

No. 1, is used used for paying decks of steamers over and about the boilers, and for decks and top-sides of ships engaged in hot climates. For sealing bottles, jars, &c., intended for shipment to tropical climates, and for various other purposes, where it is exposed to excessive heat.

No. 2, for paying decks and top-sides of vessels engaged in all climates. If the seams are very narrow on deck or round the stanchions, use No. 3.

No. 3, for paying seams and water-ways of ships for temperate climates, for uniting large timbers in general, as masts, yards, spars, beams, &c.

No. 4, for coating the inside of tanks, cisterns, water-butts, &c., for covering surfaces to prevent the admission of water, for leather bands for machinery, and various purposes, where not exposed to great heat.

No. 5, is used for filling between the planks and timbers to prevent leakage, and protect them from rot and decay. It will be found also to be a good substitute for felt.

THE MARINE GLUE LIQUID is adapted for coating the top-sides of vessels, for sleepers, buoys, and tanks, for guns and their carriages, mortars, shot, leather pipes for fire-engines, for machinery and iron work exposed to wet, and for iron ships. This may be applied at nearly boiling point, with the best paint brush, putting on a thin coat each time; three or four coats being preferable to one or two thick ones. Sufficient time must be allowed for each coat to dry. Iron

bolts, nails, or other iron work, made excessively hot, and dipped in the glue liquid, will be effectually preserved from oxydation."

GLUT. A piece of wood inserted as a fulcrum to get a better lever-power on any thing, or inserted beneath the thing prized in order to prevent its recoil when freshening the nip of the lever.

Mr Dana, in his *Seaman's Manual*, defines *glut* as a piece of canvass sewed into the centre of a sail, near the head, having an eyelet-hole in its middle for the bunt jigger or becket to go through.

GOB-LINES or GAUB-LINES. A name for the martingale back-ropes.

GONG. A species of cymbal, of Chinese origin. On account of its peculiarity and great power of tone, this instrument is well adapted for the use of steam vessels as a signal during foggy weather. Gongs are now used on board of many floating-light-vessels instead of bells.

GOOSENECK. An iron hook fitted to the end of a boom for various purposes.

GOOSE-WINGS. When the middle part of a square mainsail or foresail is bound up by a lashing to the yard, and the clues alone left loose, they form what are called *Goose-wings*. This is resorted to in scudding, if the gale be too severe to allow the ship to carry greater sail.

GORES, or GORING-CLOTHS. Angular pieces of canvass put in to increase the breadth of a sail.

Angular pieces of plank inserted to fill up a vessel's planking at any part either inside or outside, likewise get the name of *Gores*.

GRAFTING. A mode of forming a neat species of splice, partly covered over by knittles wove or plaited with rope-yarns.

GRAINS. An iron instrument with four or more barbed points, and a line attached to it; used for striking dolphins and other fish.

GRAPE-SHOT. See *Shot*.

GRAPNEL, or GRAPLING. A species of small anchor,

consisting of a piece of iron having a ring at one end, and at the other end four hooks or claws formed at right angles to each other. Some grapnels have a greater number of hooks.

GRAPLING-IRONS. Crooked irons used to seize and hold fast an enemy's vessel.

GRATINGS. Open lattice work of wood, used chiefly to cover the hatches of a vessel in good weather. There are also gratings made of iron for protecting skylights, &c.

GRAVE. To clean a vessel's bottom and pay it over with tar or any other substance.

GRAVING-DOCK. See *Dock.*

GRIDIRON. A frame formed of cross beams of wood, for laying a vessel upon in order to inspect or repair her at low water.

GRIPE. The lower ends of a vessel's stem and cutwater, which are connected with the keel. It is sometimes called the *Fore-gripe.*

A vessel is said *to gripe,* if her head tends to come up in the wind while sailing close-hauled. See also *Gripes.*

GRIPES. Bars of iron with lanyards, rings, and hooks, whereby a large boat is lashed to the ring-bolts in a vessel's deck. Those for a quarter-boat or stern-boat are made of long strips of mat going round it and set taut by a lanyard.

When a boat is secured in this manner, it is said to be *griped.*

GROMMET, or GRUMMET. A ring formed of a rope by laying round a single strand, or sometimes by splicing together the ends of a short piece of rope or line.

A Shot-grommet is a similar ring of rope made to contain shot, for use in time of action.

GROUND-SWELL. See *Swell.*

GROUND-TACKLE. A general name for the anchors, cables, warps, &c., used for anchoring, kedging, or mooring vessels.

GROUND-TIER. The tier of any thing (as of casks or timber) which is stowed lowest in a vessel's hold.

GROUNDWAYS, in shipbuilding, a substantial founda-

tion of wood or stone for the blocks whereon a vessel is built.

GROUNDAGE. A local duty charged against vessels coming to anchor.

GRUMMET. [GROMMET].

GUARD-BOARDS. A name for the *Channel-Boards.*

GUARD-BOAT. A boat appointed to row the rounds at night among the ships of war in any harbour, &c., in order to see that a good look-out is kept by the vessels. On coming alongside, she must be hailed by each ship with the watchword of the night.

During the day, the guard-boat carries despatches or orders for casual duties through the fleet when required.

GUARD-IRONS. Curved or arched bars of iron fixed over the carved work of yachts, &c., particularly over the head ornament and quarter-pieces, to prevent their being damaged. *(Shipwright's Vade Mecum).*

GUARD-SHIP. The ship of war from which all orders of the commander-in-chief at a port are made to emanate, being dated as on board of that vessel.

GUDGEONS or GOUGINGS. A name for the rudder-*braces* or *bands.* Also, the notches made in the carrick-bitts for receiving the metal bushes wherein the spindle of a windlass traverses.

GUESS-WARP or GUESS-ROPE. A rope which, for the purpose of being fastened to a distant object, in order to warp a vessel towards it, is taken out in a boat, one end made fast to the object and the other end brought back to the ship to haul by: this is done when it is thought that the boat's crew cannot make head-way in carrying out an end of the warp from the ship. A kedge is often run out in the same way.

GUESS-WARP-BOOM. A spar rigged out from a vessel's side, having a rope (also called a *Guess-rope*) rove through a thimble near its outer end, for boats to ride by when the ship is at her moorings. The lower studding-sail booms are commonly used for this purpose.

GUIDE-RODS (Air-pump). See description of *Steam-Engine,* Sect. 24.

GULF. A portion of the sea or ocean surrounded by land except at the part where it communicates with the main.

GUN. A general name given to the cannon or pieces of ordnance, whether of iron or brass, used on board of ships. Those formed of iron are better than brass guns for continued and heavy firing, but the latter have the advantage of being lighter and more durable, and they are not liable, like iron guns, to burst and fly in pieces when overcharged or overheated.

Guns are distinguished from the weight of balls which they are used to discharge: thus, a piece which is fitted for discharging a ball of the weight of twenty-four pounds is called *a twenty-four-pounder*, and so on.

Pivot-Gun. A gun set upon a frame carriage which can be turned about so as to point the piece in any direction. Heavy pivot-guns of great length are used for war steamers.

GUN-ROOM. The after division or room on the lower gun deck of a ship of war, having ports through the counter, which are hence called gun-room ports. In large ships, it is partly occupied by the gunner; in small vessels, it is used as a mess-room for the lieutenants and other officers. See *Ward-room.*

GUN-TACKLE-PURCHASE. See *Tackle.*

GUNNER, of a ship of war, a warrant officer who has the general charge and superintendence of the ordnance and ammunition, and of the practice of gunnery, on board of her.

GUNNERY. The art of charging, pointing, and firing guns and mortars. The best modern treatise on this subject is that by Sir Howard Douglas. A system of training men in the practice of gunnery, for the royal navy, is established on board H.M.S. "Excellent" at Portsmouth.

GUNWALE, or Gunnel. The same as *Plank-sheer.*

The gunwale *of a boat,* is a square piece of wood going round the upper edge of the sheer-strake, either inside or outside, in order to form a proper binding for the top of the boat.

GUY. A rope attached to anything in order to steady it and bear it either way in hoisting or lowering. Also, a rope

extended from the head of sheers, and made fast at a distance on each side to keep them steady.

In like manner, ropes used to steady boat's davits are called *Davit-guys.*

A guy is also a large rope stretched between a vessel's main and fore mast heads, with tackles made fast to its bight, to assist in loading and discharging. In whale-fishing vessels these are called *Blubber-guys,* from being used (among other purposes) in hoisting blubber on board.

See *Jib-guys* and *Windsail.*

GYBE (pronounced JIBE). To shift over the boom of a fore and aft sail from one side of the vessel to the other while sailing before the wind. The sail may gybe by the effort of the wind shifting suddenly, by bad steering, &c.: as this would run a great risk of breaking the boom and doing other damage, it should be carefully provided against by using a guy.

HAIL. To call out to another vessel, or to men in a different part of the ship. A ship also is said to *hail* from the port where she is registered.

HALF-BEAMS. See *Beams.*

HALF-BREADTH PLAN, or FLOOR-PLAN. See *Shipbuilding.*

HALF-DECK. See *Deck.*

HALF-WATCH TACKLE. See *Tackle.*

HALYARDS, or HALLIARDS. Ropes or tackles used for hoisting and lowering yards, gaffs, and sails. The halyards attached to the outer end (or *peak)* of a gaff are called *peak-halyards*: those attached to the inner end, *throat-halyards.* See *Jeers.* (Plates III. and IV.)

HAMMOCK. A piece of canvass slung from both ends, for a seaman to sleep in. The cords by which it is slung are called knittles or nettles, forming the *head-clue* and *foot-clue* of the hammock.

HAMMOCK-BATTENS. See *Hammock-Racks.*

HAMMOCK-CLOTHS. Covers for the hammocks while stowed on deck.

HAMMOCK-NETTINGS. See *Nettings.*

HAMMOCK-RACKS, or *Hammock-Battens.* Cleats or battens nailed to a vessel's beams, from which to suspend the hammocks.

HAND. *To hand a sail* is to furl it. See also *Bear a hand* and *Lend a hand.*

Hand over hand applies to the act of hauling on a rope, or of ascending it, by passing one hand before or above the other alternately.

HAND-LEAD. See *Lead.*

HAND-TIGHT. A term to imply that a rope is hauled as tight merely as it can be done by the hand.

HANDSOMELY. Gradually and carefully.

HANDSPIKE. A wooden lever chiefly used for heaving at a windlass.

HANG. *To hang on a rope,* or *on a tackle fall,* is to hold on without making it fast; also, to give all your weight in pulling upon it. See the article *Sny.*

HANKS. Rings or hoops of rope, wood, or iron, put round a stay, and seized to the luff of a fore-and-aft sail, in order to confine it to the stay.

HANSE-TOWNS. A name given to certain towns situated in the North of Europe, which, in the 13th century, formed an association called the *Hanseatic League,* having for its object the protection of mercantile property. The name of Hanse-towns is now confined to Lubec, Hamburgh, and Bremen, whose mercantile consuls are occupied with the individual concerns of their respective constituents (*Waterston's Cyclopaedia of Commerce*).

HARBOUR, HAVEN, or PORT. A general name for any place constructed to admit shipping, and wherein vessels may discharge and load cargoes in shelter and security. The term *harbour* is also applied to any natural inlet of the sea in which vessels may find secure anchorage. See *Port* and *Dock.*

BAR-HARBOUR. A harbour which, from having a bar or bank at its entrance, cannot admit ships of heavy burden, or can do so only at high water.

TIDE HARBOUR. A harbour wherein the tide ebbs and flows; in contradistinction from a wet dock.

HARBOUR-DUES, or PORT-CHARGES. See *Port.*

HARBOUR-MASTER. A person appointed to attend to the mooring of vessels in a harbour, and to see that the regulations of the port are properly attended to by the ships frequenting it.

HARD-A-LEE, *Hard-a-weather, Hard-a-port,* and *Hard-a-starboard,* are phrases respectively expressed of the tiller being put close to the lee, weather, port, and starboard sides of a vessel.

HARPINGS, or HARPINS, in shipbuilding, pieces of oak similar to ribbands, but trimmed and bevelled to the shape of the body of the ship, used to hold the fore and the after cant bodies together, at the height of the wales, until she is planked. The term is especially applicable to those at the bow: hence, we speak of a vessel having "full" or "clean harpins," according as the ship is at this part more or less acute *(Shipwright's Vade Mecum).*

HARPOON. A sort of spear with a barbed iron point, and having a line attached to it; used for striking whales. The line is bent to a short piece of rope called a *foreganger,* which is grafted to the shank of the harpoon. A portion (called the stray-line) consisting of about five or six fathoms of the line first put into the boat, is left uncovered by the remainder of the line, and is coiled by itself at the stern of the boat; it is furnished with an eye for the facility of connecting it with the lines of any other boat. *The gun-harpoon,* which is fired from a gun of a peculiar description, is made wholly of iron, and has a chain or long shackle to which the whale line is made fast.

The man who throws or fires harpoons from a whale fishing boat is called a *harpooner:* he also guides the lines, and has lances for the purpose of killing any entangled whale. When in pursuit, he pulls the bow oar. The boat is commanded by him.

In the Davis' Straits fishing, when a whale has plunged into the waves after being struck, it remains under water for about half an hour, more or less; and the boats meanwhile separate in various directions, in order that one at least may

be within "*a start*"—that is, about two hundred yards from the point of its rising, at which distance they may reach and pierce the whale with one or more harpoons before it again descends, as it usually does for a few minutes.

A full account of these and other interesting particulars is givenin Captain Scoresby's description of the *Northern Whale Fishery*, which we have already referred to under the head "Flensing."

HASP, *for a Bowsprit:* a semicircular clamp turning in an eyebolt fixed in the stem head of a sloop or boat, and fastened by a forelock in order to secure the bowsprit down to the bows.

HAT-MONEY. See *Primage.*

HATCH, or HATCHWAY. An opening in a vessel's deck to afford an entrance into the hold, or from one deck to another. *The fore hatch* is near the bow: *the main hatch,* in or about the middle of the ship; and the *after hatch,* or *quarter hatch,* abaft the mainmast.

The coverings over such an opening are also called *hatches. A booby hatch,* is a covering for the hatchway, which lifts off in a whole piece.

See also *Crank-hatches,* and *Coamings.*

HATCH-BARS. Iron bars going across hatches to keep them down over the hatchway.

HATCHWAY-SCREENS. See *Screens.*

HAUL OFF. To sail closer to the wind in order to get farther off from any object. TO HAUL IN WITH THE OBJECT, implies to sail close to the wind, in order to approach it more nearly.

These expressions have their derivation from the phrase, HAUL YOUR WIND, or HAUL TO THE WIND, which means to bring the ship's head nearer the wind when she has been going free.

MAINSAIL HAUL! is the order given to haul the after yards round when the ship is head-to-wind in tacking. If the mainsail be not set, TOPSAIL HAUL! is the order given. LET GO AND HAUL! is the order to haul the head yards round when the ship is cast on the other tack.

HAVEN. See *Harbour*.

HAWSE. That part of a vessel's bow where holes, called the *Hawse-holes*, are cut for her cables going through.

Hence, we speak of a *foul hawse*, which implies that, when a vessel is riding with two anchors out, the cables are crossed or twisted. The hawse may be foul by having a *cross*, an *elbow*, or a *round turn*. *A cross in the Hawse*, is when, by the ship swinging round and her stern passing over the cables, the one cable is made to lie upon the other: if she continue to move round till her head is directed the same way as at first, this produces what is called *an elbow*; and *a round turn* is produced by the ship performing another half revolution. If, after this, she come round till her head is directed the same way as at first, this makes "*a round turn and elbow*." The reverse of a foul hawse, is a *clear* or *open hawse*.

See *Athwart-Hawse* and *Freshen*.

HAWSE-BLOCKS. See *Hawse-Plugs*.

HAWSE-BOLSTERS. Pieces of canvass stuffed with oakum and roped round; used at sea for plugging the hawse-holes, when the cables are bent.

HAWSE-BOX, or *Hawse-pieces*. Pieces of plank bolted outside round each of the hawse-holes to support the projecting part of the hawse-pipe.

HAWSE-HOLE. The hole on either side of a vessel's bows through which the cable is run out. In large ships there are two hawse-holes on each side.

HAWSE-HOOKS. See *Breast-Hooks*.

HAWSE-PIECES. See *Hawse-Box*.

HAWSE-PIPE. A cast iron pipe fitted into a hawse-hole to prevent the chain cable from cutting the wood. In vessels which have rope cables, a leaden pipe is used.

HAWSE-PLUGS, or *Hawse-Blocks*. Blocks of wood made to fit into the hawse-pipes, and put in from the outside when at sea. See *Bucklers*.

HAWSE-TIMBERS. The upright timbers in the bow bolted on each side of the stem and in which the hawse-holes are cut. (Plate II. fig. 7).

HAWSE-WOOD. A general name for the hawse-timbers.

HAWSER. A kind of small cable used on various occasions, as, for mooring, &c.

HAWSER-LAID ROPE. See *Rope.*

HEAD. A term applied generally to the fore part of a vessel. Hence, we say, "head sails," "head yards," &c., in opposition to "after sails," &c. See *By the Head.*

It is employed to signify the upper end of any thing, as *a mast head, a timber head*, and so on.

Also, an ornament at the bow of a vessel over the cutwater. If it be a carved figure, this is called a *figure-head ;* if simple carved work in the form of a volute or scrole turning outwards, it is called a *billet-head* or *scrole-head* (Plate III); and if the scrole bend inwards like the handle of a violin, it gets the name of a *fiddle-head.*

HEAD-BOARDS, or BERTHING. Boards put in between the head-rails, whereon the ship's name is sometimes painted.

HEAD-FAST. See *Fast.*

HEAD-PUMP. See *Pump.*

HEAD-RAILS. Short pieces of timber put in between the luff of the bow and the back of the figure on a vessel's head. There are two on each side, one straight and the other curved : a thin piece of plank fayed to the inside of the latter, in order to strengthen it, is called the *false-rail ;* and the boards or netting fixed between the head-rails are called the *head-boards* or *head netting.*

The head-rails assist in securing the upper end of the cutwater on which the figure is placed, and at the same time they make an ornamental finish to the whole.

Beneath them, at the heel of the figure, there are corresponding pieces of moulded knee-timber, called *head-knees* or *cheek-knees*, fayed edgeways to the cutwater and stem, for steadying the cutwater ; and there are upright pieces of timber which get the name of the *head-timbers,* inserted between the upper knee, and the curved rail to support the frame of the head-rails.

See also *Trail Boards.*

HEAD-ROPE. See *Bolt-rope.*

HEAD-SEA. When the waves meet the head of a vessel under way, they are called a *head sea.*

HEAD-WAY. A vessel has *head-way*, when she is moving ahead; *stern-way*, when moving astern.

HEAD-TO-WIND. A vessel is said to be *head to wind*, when her head points directly to windward; particularly in the act of tacking, or while lying at anchor.

HEART. A block of wood (in shape sometimes resembling a heart) used to secure the lower ends of stays. That for the fore-stay is called the *Bowsprit-heart*, through which the inner end of the jib-boom is inserted.

HEAVE. To throw: as, to *heave the lead*, or to *heave the log.*

The term *heave* is also applied by seamen to the act of turning round the capstan, windlass, or any machine of a similar kind, by means of bars, handspikes, or otherwise; this is called *heaving at* the capstan, &c. *Heave and away!* is an encouraging order given to the men to lend greater force in heaving up the anchor, in order to make it quit its hold of the ground: *Heave and rally!* a similar order to heave briskly. See *Cable* and *A-wash.*

HEAVE ABOUT *a vessel:* to put her on the other tack.

HEAVE AHEAD. To advance the ship by heaving on a cable or rope fastened to an anchor or other object ahead of her. *To heave astern*, is the reverse.

HEAVE DOWN. See *Careen.*

HEAVE-SHORT. To heave in on the cable till the ship is sufficiently near her anchor to allow the sails to be set before the anchor is tripped.

HEAVE IN STAYS. See *Stay.*

HEAVE TO. See *Bring-to.*

HEAVE *of the Sea:* the power that the swell of the sea exerts upon a vessel in driving her out of or faster on in her course. For this, allowance has to be made in the day's work.

HEAVER. A small piece of wood used in the same way as a lever, chiefly for the purpose of giving additional purchase on a rope.

HEEL. The lower end of anything: as, of a *timber*, *mast*, or *bowsprit*.

The heel of a ship, is the after end of the keel and lower end of the stern-post.

A ship is said to heel, when she cants or inclines over from the vertical position.

HEEL-KNEE. The knee which connects the keel of a boat with the stern-post. See also *Dead-wood*.

HEEL-ROPE. A rope applied through the heel of any thing: particularly that which is rove through a sheave at the heel of the jib-boom, or of the bowsprit, for the purpose of hauling it out. The ropes which are used at the heels of topmasts and topgallant masts are termed *mast-ropes*.

HEIGHT OF BREADTH. See the article *Shipbuilding*.

HELM. The machine by which a vessel is steered. It consists of the *Rudder*, the *Tiller*, and the *Wheel*. See these articles, and also *A-lee*, *Amidships*, and *Weather-helm*.

The following rule given by Darcy Lever is useful to be borne in mind. *In going ahead, the tiller must be put the contrary way to that in which the bow is intended to move; and in going astern, the same way that the head is to be turned.*

DOWN WITH THE HELM! is an order to put the helm a-lee: UP WITH THE HELM! to put it a-weather. EASE THE HELM! to let it come more amidships, when it has been put hard up or down. RIGHT THE HELM! to put it amidships. PORT THE HELM! To put the tiller to the port or larboard side: STARBOARD THE HELM! to put it to the starboard side of the ship. SHIFT THE HELM! to put it from starboard to port, or the reverse.

HELM-PORT. The hole in a vessel's counter, into which the rudder-case is inserted.

HELMSMAN. See *Steer*.

HERMAPHRODITE BRIG. See *Brig*.

HIGH AND DRY. The situation of a vessel when the receding tide leaves her dry upon the strand.

HIGH WATER. See *Tide*.

HITCH. A species of knot used for making fast a rope or for connecting two ropes together. Explanations of hitches, with illustrations of them, are somewhat fully given by Mr Dana, in his *Seaman's Manual.*

HOG. A name for "a flat rough broom used for scrubbing the bottom of a vessel." *(Dana's Seaman's Manual).*

HOGGING. A vessel is said *to hog,* or *to be hogged,* when the middle part of her is so strained as to curve or arch upwards. If the strain cause her middle part to arch downwards, she is said *to sag.*

"A weak vessel may become hogged, by the great upward pressure of water on the broad part of the bottom when the cargo is unequally distributed towards the head and the stern. On the other hand, ships deeply laden, with their cargoes nearly amidships, may sag downwards, in proportion as the weight of the goods exceeds the upward pressure of the water."

HOIST. To raise anything: particularly when done by means of a tackle. The term *Hoist* is also used with reference to the height of any sail which is hoisted by a yard or boom: in this sense we say *give the sail more hoist,* that is, make it extend farther upwards. See *Fly.*

HOLD. The space between the lowest deck and the ship's bottom, wherein the ballast and stores of a ship of war, and the cargo and ballast in a merchant vessel, are stowed.

HOLD *water.* To check the progress of a boat by holding the oars in the water so as to meet its resistance.

HOLD *a good wind.* See *Weatherly.*

HOLD *her own.* A vessel is said to "hold her own," when she makes no progress but yet does not lose ground: also, when she advances as fast as another ship with which she is in company.

Keep a good hold of the land. See *Keep the land Aboard.*

HOLIDAY. If in laying on a coat of tar, paint, or the like, or in paying the seams of a vessel, some part be neglected or passed over, it gets the name of a *holiday* among seamen.

HOLYSTONE. A soft sand stone used for scrubbing a vessel's decks.

HOME. A term implying the proper situation of any object. *The sheets of a square sail are said to be home,* when the clues are hauled chock out to the sheave-holes.

The wind is said to blow home, when it blows continuously over the sea and land with equal velocity: it is said *not to blow home,* when it is blowing from the sea right upon a mountainous tract of country, and the high land has the effect of rejecting the wind and keeping it calm along shore.

Come Home. See *Anchor.*

See also *Tumble-home.*

HOOD. A name given to all the oremost and aftermost planks of a vessel's bottom both inside and outside. Hence, the ends of these planks which are next the stem or stern-post are termed *Hooding-ends.*

A covering for a companion hatch, for a mortar, &c., also gets the name of a *Hood,* and the same term is applied to a piece of tarred canvass put on the ends of standing rigging to prevent water from rotting them.

The upper part of a funnel which is bent and made to turn with the wind, so that the smoke from the cookhouse may be carried to leeward, is called its *hood.*

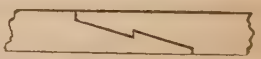
HOODING-ENDS, Hood-Ends, or Wood's-Ends. See *Hood.*

HOOKS. This term is, in sea affairs, applied not only to crooked pieces of iron for hooking on to anything, but also to the crooked or "knee" pieces of timber bolted athwart a vessel's stem inside: see *Breast-hooks.*

Boat-Hook.
Can-Hook.
Clove-Hook. } See these articles respectively.

Foot-Hooks. The same as *Futtocks.*

Rave-Hook. See that article.

HOOK-SCARPH. Where two pieces of wood are scarphed together in this fashion,  it is called *a Hook-scarph.* In like manner, the butt or part where they join is called a

Hook-butt: and this method of connecting them together gets the name of *Hook and Butt.*

HOOPS. Of the different kinds of hoops used for ship-building purposes, we may notice the following:—

CLASP-HOOPS, or *Truss Hoops*, for masts or spars, are open hoops of iron made so that their ends, being let into each other, may be fastened by means of forelocks. They are used particularly for a mast when it is formed of several pieces or when it is fished.

MAST-HOOPS, are wooden hoops which encircle a mast, and to which the fore leach of a fore-and-aft sail is bent.

SLING-HOOP. } See *Slings* and *Spider-Hoop* respec-
SPIDER-HOOP. } tively.

HORARY TABLES. See LUNAR TABLES.

HORIZON. *The apparent* or *visible horizon* is that circle which bounds the view of a spectator at sea, or on an open plain, the eye being supposed in the centre of the horizon; this circle is divided into thirty-two parts called *points*, or *rhumbs*, as to which see the article COMPASS. A circle whose plane passes through the eye of an observer, perpendicular to a plumb line, is called *the sensible horizon;* and a circle parallel to this, passing through the centre of the earth, is *the rational horizon.*

The depression (or, as it is generally termed, *the dip*) *of the horizon*, is the angle contained between the sensible and apparent horizons, the angular point being the eye of the observer; allowance requires to be made for this, in any observation of altitude. *(Norie's Epitome of Navigation and Nautical Astronomy.)*

ARTIFICIAL HORIZON. An instrument contrived for the purpose of supplying the mariner with a horizon by artificial means, in order to enable him to obtain altitudes when the horizon of the sea is obscured by fog, or concealed by intervening land. A description of Captain Becher's *Pendulum Marine Artificial Horizon*, which is an instrument of this kind to be attached to the sextant, is given, along with directions for its use, in the Nautical Magazine

for the year 1845. Reference may also be made to *Mrs Taylor's Epitome.*

HORNING, in shipbuilding, implies placing or proving any of the timbers, particularly the floor-timbers and frames, to stand square from the middle line of the ship, by setting off equal distances on it from the middle line, on each side, by means of a batten or staff.

HORNS. The outer ends of a vessel's cross-trees. See also *Jaws.*

HORSES, or YARD-HORSES. Ropes attached to a vessel's yards, for the men to stand on while reefing or furling: now known by the name of *foot-ropes;* see that article. They are used not only for the yards, but also for the jib-boom and flying jib-boom.

FLEMISH-HORSE. A small foot-rope at a topsail-yard-arm.

HORSE (FORE-SHEET). An iron rod or piece of wood fastened at its ends athwart the deck of a single masted vessel, before the mast, for the foresail sheet to travel upon.

MAIN-SHEET-HORSE. This is generally a kind of iron dog fixed at the middle of a wooden beam which stretches across a vessel's stern from one quarter-stanchion to the other. On it the main sheet block travels. The beam itself often gets the name of the main-sheet-horse.

TRAVERSE-HORSE. See *Jack-Stays.*

TRYSAIL-SHEET-HORSE See *Trysail.*

HORSE-IRON, or HORSING-IRON. An iron fixed in a handle, used with a beetle by caulkers to *horse-up,* that is, to *harden in* the oakum in a vessel's seams.

HOT-WELL. See description of *Steam-Engine,* Sect. 19.

HOUNDS. Pieces of oak, one of which is bolted on each side of a lower mast to support the trestle-trees and the higher masts. They also get the name of *cheeks.*

HOUSE *(pronounced howze). To house a gun,* means to run it in clear of the port and secure it.

HOUSED IN. See *Tumbling Home.*

HOUSE-LINE, or HOUSING. A small cord used to seize the clues of sails, and for other purposes.

HOUSING *of a lower mast,* that portion which is beneath

the upper deck; *of a bowsprit,* that portion which is within the knight-heads.

HOWITZER. A kind of light mortar "which can be employed on most occasions either as a cannon or mortar."

It has been lately thought advisable that brass howitzers should be substituted instead of iron carronades in the boats of vessels in the naval service.

HOWKER. A name for a pilot boat: common on the coast of Ireland.

HOY. A name given to a sort of lighter, generally sloop rigged.

HULK. An old worn out ship laid up to be used as an hospital or a prison ship, &c. Such vessels when fitted with sheers, for lifting and putting in the lower masts of ships belonging to the Royal Navy, get the name of *sheer-hulks.* See *Sprit.*

HULL. The body of a vessel independent of her spars, rigging, and other furniture.

A vessel is said to be *hull-down,* when she is so far off that, owing to the convexity of the globe, no part of her is visible but the masts and sails.

HURRICANES. Dreadful tempests, in which the wind sometimes shifts suddenly from one direction to that opposite, raising the sea in pyramids. They occur among the West Indian Islands, occasionally from about the beginning of August till the month of January. They are also liable to happen near the islands of Mauritius and Bourbon from the beginning of November to the ends of March and April respectively, and the effect of these sometimes extends nearly to the coast of New Holland. Hurricanes likewise happen near the coasts of India, particularly in the Bay of Bengal, at the changing of the monsoons. Those which are met with in the Chinese seas are called *Typhoons. (Horsburgh's India Directory).*

HURRICANE-HOUSE. A name occasionally given to the round-house on a vessel's deck.

HUSBAND (SHIP'S). An agent for the owners of a vessel, employed to take a general management thereof, in

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purchasing stores, &c., attending to the ship's papers, entering into contracts of affreightment, receiving payment of freights, settling with the master for wages and disbursements, and rendering an account of the whole to his employers. He may be either a part-owner of the ship or a stranger: if not a part-owner, his appointment is usually made in writing. He cannot delegate his authority.

The powers of a ship's husband do not extend to the borrowing of money; but, for stores, repairs, or other necessary furnishings or disbursements, he may grant bills which will be binding upon the shipowners.

He has no right to insure for any part-owner, nor for the owners in general, without special authority. In a case, however, where the managing owner, without having received directions to insure, effected in his own name a joint insurance on the entire ship, and charged the cost of it in the ship's accounts, which were inspected by the other owners and not objected to all of them were found liable.

(Park on Insurance—Tenterden on the Law of Merchant Ships and Seamen—Waterston's Cyclopaedia of Commerce).

HYDROGRAPHY. The art of surveying and describing the watery part of the terraqueous globe with every thing which is of importance to the mariner, whether out at sea, along the coast, or in gulfs, bays, channels, or rivers. A person skilled in this art is termed a *hydrographer*.

The best modern treatise on *marine* or *nautical surveying* is that by Captain Belcher.

HYGROMETER. An instrument for ascertaining the quantity of moisture in the atmosphere. Mrs Taylor, in the introduction to her "Lunar and Horary Tables," notices that this forms a cheap and useful appendage to the marine barometer.

ICE-ANCHOR. An anchor resembling a pickaxe with one arm: it is used for securing whalers to floes of ice, &c.

ICE-BEAMS. See the article *Fortifying*.

ICE-BERG, or ICE-MOUNTAIN, is the name not only for "a glacier occupying a ravine or valley in an arctic country,"

but also for "a large insulated peak of floating ice." These floating icebergs occur in many places in the arctic and antarctic regions, some of them of astonishing magnitude: the most abundant source of them known in the arctic regions (Captain Scoresby remarks) is Baffin's Bay, whence they make their way toward the south, down Davis' Strait, and are scattered abroad in the Atlantic to an amazing extent.

Icebergs have often the appearance of "cliffs of chalk or of white or grey marble:" sometimes their surfaces glisten with the reflection of the sun's rays. "Different shades of colour occur in the precipitous parts, accordingly as the ice is more or less solid, and accordingly as it contains strata of earth, gravel, or sand, or is free from any impurity. In the fresh fracture, greenish grey, approaching to emerald green, is the prevailing colour. In the night, icebergs are readily distinguished by their natural effulgence; and in foggy weather by a peculiar blackness in the atmosphere, whereby the danger to the navigator is diminished. As, however, they occur far from land, and often in unexpected situations, navigators crossing the Atlantic, in the gloom of night, between the parallels 50° and 60° of latitude, or even farther to the south, require to be always on the watch for them. In some places near Cape Farewell, or towards the mouth of Davis' Straits, they are occasionally met with in extensive chains; in which case fatal accidents have occurred by vessels getting involved among them in the night during storms."

The situation of an iceberg is so little affected by the wind, owing to the great resistance it presents to the water in moving through it, that it often affords a stable mooring to a ship in strong adverse winds or on other necessary occasions. But mooring to *lofty* icebergs is attended with considerable danger, as, from being sometimes finely balanced, they are apt to be overturned. When ships moor to icebergs, they should be as remote from them as their ropes will allow; yet even when riding at the distance of a hundred yards from the ice, accidents may happen by pieces termed *calves*, becoming detached from beneath and rising with great velocity and force.

Under this head it may be advisable to notice the following explanations of terms used in the icy seas, given in Mr Scoresby's *Account of the Arctic Regions,* from which the above particulars are extracted.

"*Bay-ice* is that which is newly formed on the sea.

"*Brush-ice* is smaller than drift ice; it may be considered as the wreck of other kinds of ice, consisting of roundish nodules, and fragments of ice broken off by the attrition of one piece against another.

"*Drift-ice,* consists of pieces less than floes, of various shapes and magnitudes.

"*Heavy-ice,* is that which has a considerable depth in the water; *light-ice,* that which has very little depth; the former is dangerous to shipping, but the latter not.

"*Land-ice,* consists of drift-ice attached to the shore, or which, by being covered with mud or gravel, appears to have been recently in contact with the shore; or the flat ice, resting on the land, not having the appearance or elevation of icebergs.

"*Open-ice,* or *sailing-ice,* a number of pieces sufficiently separate to admit of a ship sailing conveniently among them.

"*A Calf* is a portion of ice which has been depressed and is kept down by some larger mass from beneath which it shows itself on one side. There is danger in sailing over a calf, as it may rise with violence to the surface of the water.

"*A field* is a sheet of ice so extensive that its limits cannot be discerned from a ship's mast head." "The whale-fishers at all times require unremitting vigilance to secure their safety, but scarcely in any situation so much as when navigating amidst those fields; in foggy weather they are particularly dangerous as their motions cannot then be distinctly observed."

"*A Floe,* is a piece of ice similar to a field, but the extent of which can be distinguished. This term is seldom applied to pieces of ice of less diameter than half a mile or a mile.

"*A Hummock,* is a protuberance raised by some pressure or force upon any plane of ice.

"*A Lane* or *Vein*, is a narrow channel of water in packs or other large collections of ice.

"*A Pack*, is a body of drift-ice of such magnitude that its extent is not discernible. A pack is said to be *open* when the pieces of ice, though very near each other, do not generally touch; and *close*, when the pieces are in complete contact.

"*A Patch*, is a collection of drift or bay ice, of a circular or polygonal form. In point of magnitude, a pack corresponds with a field, and a patch with a floe.

"*Sludge*, consists of a stratum of detached ice crystals, or of snow, or of the smaller fragments of brush-ice floating on the surface of the sea. This generally forms the rudiments of ice when the sea is in agitation.

"*A Stream*, is an oblong collection of drift or bay-ice, the pieces of which are continuous. It is called a *Sea-stream* when it is exposed on one side to the ocean, and affords shelter from the sea to whatever is within it.

"*A Tongue*, is a point of ice projecting nearly horizontally from a part that is under water. Ships have sometimes run a-ground upon tongues of ice."

ICE-BLINK. "A stratum of a lucid whiteness which appears over ice in that part of the atmosphere adjoining the horizon; this phenomenon is seen wherever the horizon is tolerably free from clouds, and in some cases even under a thick sky." The ice-blink, when occurring under very favourable circumstances, shows by reflection the figure of the ice, perhaps twenty or thirty miles beyond the limit of direct vision: it also "enables the experienced observer to judge whether the ice thus pictured be field or packed ice; if the latter, whether it be compact or open, bay or heavy ice. Field-ice affords the most lucid blink, accompanied with a tinge of yellow; that of packs is more purely white; and of bay-ice, greyish. The land, on account of its snowy covering, likewise occasions a blink, which is more yellow than that produced by the ice of fields."

In the Arctic Regions, when there has been a fall of thick snow, which has cleared away, and a gale is at hand, "a lumi-

nousness on the horizon, resembling the *ice-blink*, sometimes points out its direction; and a noise in the upper regions of the air announces its immediate approach." On the subject of these sudden storms, and the value of the barometer in giving warning of them, Captain Scoresby gives farther important information in his work already referred to.

ICE-BOUND. A term implying that a vessel is surrounded by ice, so as to be prevented from proceeding on her voyage. It may be stated as a general rule, that the expenses attendant on such detention, or charges for cutting the ship out in order to avoid the delay, fall upon the shipowner.

IDLERS. A name given on board a ship to those who are not employed to keep any watch, but sleep at night and work during the day.

IMPRESSMENT. The system of *pressing* seamen, that is to say, compelling them in time of war to serve in the Royal Navy. On this subject, reference may be made to *M'Culloch's Dictionary of Commerce.*

A party of seamen employed on shore in pressing men, gets the name of a *Press-Gang.*

IN-BOARD. See *Out-Board.*

IN-HAULER. See *Out-Hauler.*

INJECTION PIPE (and COCK). See description of *Steam-Engine*, Sect. 11.

INNER-POST. See *Stern-Post.*

INSPECTION, in navigation, the method of keeping a ship's way by reference to nautical tables. *Construction* is the method of ascertaining it by means of trigonometrical problems and diagrams.

INSURANCE (MARINE). A contract of indemnity, whereby one party engages for a stipulated sum to protect another who has an interest in any vessel, or in property on board of it, against the perils to which it may be exposed in the course of a certain voyage, or during a specified period of time.

The party taking the risk is called the *Insurer* or *Under-*

writer; the party obtaining the insurance is called the *Insured*; the sum charged by the insurer in consideration of the risk run, the *Premium*; and the document by which the underwriter binds himself, a *Policy of Insurance*.

These contracts are effected either with private individual underwriters, with public Insurance Companies, or with Insurance Clubs, which last are associations formed by shipowners for the purpose of dividing amongst themselves one another's losses, each entering his ship for such an amount as he pleases, subject to agreed on regulations. The private individuals engaged in this branch of business in London are the Underwriters at *Lloyd's*, to which article reference may here be made.

INSURANCE (POLICY OF). As already mentioned, this means the instrument which contains the terms of the contract. It consists partly of a printed form; the remaining part, which is filled up in writing, ought distinctly and explicitly to express the conditions on which the insurance is effected.

It is common for the insurer to issue a slip or copy policy at the time of effecting the insurance; but this requires to be afterwards extended on a stamp.

The following is a list of the stamp duties at present exigible on Marine Insurance Policies:

Insurances *for the voyage;*	
Premium not exceeding 10s.	3d. per cent.
„ exceeding 10s. and not exceeding 20s.	—6d. „
„ „ 20s. „	30s.—1s. „
„ „ 30s. „	40s.—2s. „
„ „ 40s. „	50s.—3s. „
„ „ 50s.	—4s. „
Time Policies;	
Not exceeding six months,	2s. 6d. „
Exceeding „	4s. „

It is a common practice for the insurer to charge the duty at a slightly higher rate, as interest on the advance thereof.

No Time Policy is allowed to be made for a longer period than twelve calendar months, and a continuation of the

risk in consideration of an additional premium requires a new stamp.

An Open Policy, is one in which the value of the interest at risk is not stated: *A Valued Policy*, is one wherein the interest is expressly valued.

In order to give validity to the contract, it is necessary that the insured have a right of property (or "interest") in the thing insured. A policy without interest is held to be a mere wager, and it is declared, by statute 19th Geo. II., c. 37, that insurances made on ships, or on goods or effects laden on board of ships, "interest or no interest," or "without farther proof of interest than the policy," or by way of gaming or wagering, or "without benefit of salvage to the insurer," shall be null and void.

The value of a ship for insurance, is what she is worth in this country at the time when the voyage commences, including all her stores and outfit. Money advanced for seamen's wages before sailing on the voyage may also be added, and the whole may be covered with the premium of insurance, &c., as explained in Mr Stevens' Essay on Average, page 193. It is customary and proper to state the value of the ship in any policy of insurance effected thereon. This fixes the basis of the settlement among the different underwriters on the ship in case of loss or average. A ship ought never to be valued below the sum actually insured upon her: and when this has been done in one or more of the policies, any average that occurs ought nevertheless to be divided among the underwriters upon the actual value insured; otherwise the owner would recover more than an indemnity.

Under an open policy on *goods*, the amount of interest at risk, or the *value for insurance*, is their first cost and charges until on board the ship at the place of loading: this may be covered with the premium of insurance, &c., as above alluded to. But the insured is allowed to value his goods in the policy, and in such valuation to include a fair mercantile profit: when insuring manufactured goods, colonial produce, or the like, it is advisable to apportion the charges and the profit on all the packages, and to value each separately, re-

ferring to their marks and numbers, and stipulating that average be recoverable "on each bale," "on each species," or on each series of five or ten bales (and so on, according to the description of goods, and at the pleasure of the parties when effecting the policy), "as if separately insured." In the event of goods being sea damaged, if the policy be open, the deterioration per cent. (which is determined by the difference between the cash market price of the goods, had they arrived sound at the port of destination, and the sum they actually bring by public auction at that port) is calculated on the invoice cost of the damaged articles covered with insurance: if the policy be valued, the deterioration is calculated on the valued amount of the damaged articles, without reference to whether there be *freight paid in advance* or *profit* included in such value. A separate policy on profit is considered to be free from particular average and without benefit of salvage, but sometimes it is by express stipulation made liable to the same extent as a policy on goods. It may be well to notice here, that, in the case of a valued policy, the value so agreed on is adopted as a basis for regulating, in the manner above explained, the settlement of any claims for partial loss or sea damage, but where the net value of goods delivered at their port of destination exceeds that stated in the policy, all charges of general average or salvage, as well as the particular charges attaching to the cargo in any adjustment of general average, fall to be divided on this delivered value without regard to the value in the policy of insurance.

Under an open policy on *freight*, "the interest," says Mr Stevens, "is, according to the practice of Lloyd's, the amount of the manifest or freight list covered with premium, &c., as on the preceding interests." It is thus the *gross* and not the *net* freight which is the insurable interest (as decided in the case of *Palmer* v. *Stackburn*); and, therefore, while the net freight is the contributory value for general average, yet any loss, or general or particular average charges, arising upon this interest, should be divided on the gross freight in settling with the insurers thereof.

The risk on the ship is usually stipulated *to commence* at

and from a certain place, and to continue until she arrive at some others pecified place, and have been there moored twenty-four hours in good safety; *on the goods,* from the loading thereof and until they be safely discharged and landed:—generally speaking, the *risk on freight* commences from the time the goods are on board; but, as already noticed under the article "freight," if there have been a contract for their shipment or a charter-party, or if the cargo have been provided, and the ship was ready to receive it, the owner may recover the amount insured although the goods or the whole of them were not on board at the time of the vessel's loss; farther, the ship has been held as being in readiness to receive her cargo, though wrecked in the act of taking her out of dock for that purpose: the risk on freight continues until the goods are safely landed.

The Perils insured against may be described generally as every extraordinary accident happening by the violence of the wind or waves, by enemies or pirates, by lightning or accidental fire, by driving against rocks, by collision with other vessels, by the stranding of the ship, and so on. But damages found due for carelessly running down another vessel are not recoverable unless this risk be specially insured: also, if goods be destroyed by their spontaneous combustion, the underwriters are not liable for such loss, though the injury thereby resulting to the rest of the cargo, or to the ship, and the consequent loss of freight on all the goods, would be recoverable: neither are the underwriters liable for damage suffered by rats or worms eating holes in the ship's sides or bottom, nor for the wear and tear of the voyage, under which last head it is customary to include the parting of cables, and consequent loss thereof, and of the anchors, by the heavy pitching of the vessel—the splitting of sails, or carrying away of a yard, under ordinary circumstances—and similar losses. We may notice, however, that if a vessel's bottom be wormed, in consequence of sheets of copper having been rubbed off it by an accident for which the insurers are responsible, they would also have to pay for the damage occasioned by the worms. Again, while the underwriters on the

ship are not considered liable for repairs rendered necessary by the mere working and straining of the ship at sea, though she were perfectly seaworthy before sailing, yet, if a leak have been sprung in this way, the underwriters on the goods are liable for the damage they may thereby suffer. Among the risks which the underwriter agrees to bear, the following is noticed in the printed form, "Arrests, restraints, and detainments of all kings, princes, and people of what nation, condition or quality whatsoever:" the term people here is held to imply the governing power of a country—a nation in its collective and political capacity: farther, a detention of such a nature consequent on the fraud or misconduct of the insured himself would not charge the underwriters. See *Embargo.* In the case of *Nesbitt and others* v. *Lushington* (4 *T. R.*, 783. *Hughes's Treatise on Insurance,* p. 236), Lord Kenyon laid down, that loss by depredation of a mob may be recovered upon a policy of insurance on a count stating the loss to have happened by piracy.

The following printed *Memorandum* generally occurs at the foot of a policy of marine insurance, "*N. B.—Corn, fish, salt, fruit, flour, and seed are warranted free from average, unless general, or the ship be stranded: sugar, tobacco, hemp, flax, hides, and skins are warranted free from average under five pounds per cent., and all other goods, also the ship and freight, are warranted free from average under three pounds per cent., unless general or the ship be stranded,*"—implying, that the underwriters shall be liable for all claims of general average, but free from any particular average claim at all—or else of any particular average claim not amounting to the stipulated percentage—unless the ship be stranded in the course of her voyage. In cases of damage *to the cargo, the charges* are not allowed to be added in order to make up three or five per cent.: nor, according to what Mr Richards states as the practice of Lloyd's, are the *accessory expenses* attending the repairs *of the ship,* such as surveyors' fees, &c., allowed to be added in order to make up three per cent. on its value, but only those expenses which are indispensable to the repairs of the damage, and without

which they could not be effected, such as graving-dock dues and use of stages. None of these expenses, also, are recoverable unless the whole claim amount to an average, that is, unless it amount to the stipulated per centage on the value of the interest insured—or of the individual parts of that interest where, in a policy on goods, the clause, "Average recoverable on each bale," or "on each species," &c., is introduced. It may be proper here to notice, that the *particular charges* which, in an adjustment of general average, attach to the cargo and freight, do not require to amount to a certain per centage, in order to make the underwriters liable. It is the custom to consider potatoes as free from particular average unless the ship be stranded. "Corn" (in the memorandum) is made to include *pease* and *beans*, and also *malt*, together with every species of grain except *rice:* farther, it has been held that "salt" does not include saltpetre, (*Stevens*, p. 220). *Two or more averages* occurring in the course of a voyage may be taken together, in order to make up three per cent. on the value of the ship: and if one set of underwriters have the risk both of the outward and homeward passages, the whole is considered as one voyage.

The following clause, which has been already adverted to, is usual in policies of insurance on certain descriptions of goods, "*Average recoverable on each species*" (or "on each package") "*as if separately insured*"—"*on every fifty bags running numbers*," *&c.* This implies that particular average shall be recoverable if it amount to the necessary per centage on any one of these parts of the shipment, though it do not amount to five or three per cent. (as the case may be) on the whole interest. "This is now, indeed," says Mr Stevens, "considered so much agreeable to usage, where goods are insured direct from the place of growth or manufacture, that if the clause to pay average 'on each species' of produce, or 'on each package' of manufactured goods, is not inserted, yet a liberal construction is put on the omission, and the policy is acted on as if it were." Should the gross amount of particular average be equal to the stipulated per centage

on the whole interest, it is recoverable although in detail the average may not amount to five or three per cent. on one or more of the damaged parcels. But where two or more species of goods are insured, the gross average on each species must amount to the required per centage on that individual part of the interest: "For example, if the insurance be as follow:—

On Cotton valued in the Policy at . .	£1000
„ Sugar „ . . .	500
„ Hides „ . . .	500
Amount Insured, . .	£2000

Suppose the Particular Average on the Cotton to amount to	£200
„ on the Sugar „	14
„ and on the Hides „	14

the claim on the cotton amounting to twenty per cent. on its value of £1000 is wholly recoverable, though some of the bales may happen not to be damaged to the extent of three per cent. But although the claim of £200 alone is equal to ten per cent. on the whole amount insured, yet the average on the sugar and hides is rejected, being each under five per cent. on their respective values."

INSURANCE, (PREMIUM OF). This, as already stated, is the sum of money, or consideration, given to the insurer, on account of the risk he runs.

In marine insurances, the assured is under various circumstances entitled to a *return* of the whole or part of the premium.

When a Return of Premium is stipulated for departing with convoy, for sailing on or before a certain date, or for any other contingent occurrence tending to decrease the risk of the voyage, it is always understood (and ought to be so expressed in the policy) that the ship shall have arrived at her final port of destination: if lost short of that port, the full premium is held to be earned.

Mr Stevens mentions it as the practice of Lloyd's that, when a partial loss or particular average occurs, the under-

writer allows no return of premium on the amount of such claim, it being considered that so much has not arrived; but that this rule does not extend to the case of a general average with the charges incidental thereto.

A return of the whole premium is *implied*, though not expressly stipulated, when the insurer has run no risk, as in the case of unseaworthiness at the commencement of the voyage (where he could never have been legally liable), unless there have been fraud or wilful concealment on the part of the insured or his agent.

If, at the time when the insurance was effected, the insurer knew of the ship's arrival, he must return the premium, but not so if this fact were unknown.

When the insurer never could have been called upon for a loss of the whole sum on which he received a premium, he is to retain the premium only on that part which has been actually at his risk. This occurs in the case of *short-interest*, that is to say, when, under a valued policy, only part of the property is shipped: for example, if a hundred bales be declared on the policy, and only sixty are shipped, there is then a short-interest of forty bales, the premium for insuring which is to be returned. It also occurs in the case of *over-insurance*, that is, when under an open policy on goods or freight, it is found that a greater sum has been insured than the amount at risk. If a *double insurance* have been made, the assured cannot recover any more than the interest actually at risk; but he may recover under whichever policy he pleases, leaving the one set of underwriters to seek recourse from the other, who contribute along with them in proportion to their several subscriptions, and a return of half the premium under each policy is allowed. If part only of the interest be doubly insured, "for example, if a policy be opened in Glasgow for £1000, and the interest be valued thereat in the policy, and another insurance be effected in London to the extent of £800 on the same interest, valued at £800; in case of total loss, the insurer would of course take the £1000 from the Glasgow policy, leaving those underwriters to seek their indemnity from the London policy; there is only £800 doubly

insured, and the London policy would have to pay £400 to the Glasgow underwriters: so that if, instead of a loss, the goods had arrived, the return premium would be made on £400 on each policy, and the Glasgow policy having run the risk on £600, as shewn above, would retain the premium on that sum."

RE-INSURANCE. A contract whereby a third party takes upon himself a risk, or part of a risk, which had been previously insured by another. With this contract the insured has NO concern whatever.

By the Act 19th Geo. 2 c. 37 (still in force), it is declared unlawful to make any re-insurance "unless the insurer shall be insolvent, become bankrupt, or die, in either of which cases such insurer, his executors, administrators or assigns, may make re-insurance to the amount of the sum before by him insured, expressing it in the policy to be a re-insurance."

INWARD. See *Bound* and *Outward*.

IRON, as is well known, has now come into extensive use for nautical purposes, not only as regards its application to the manufacture of chain-cables, rigging, &c., but also in a more important branch, the construction of iron vessels. The following seem to be considered by Mr Grantham and other advocates for its general adoption, as the leading qualities which render it a material peculiarly suitable for shipbuilding: the rapidity with which the raw material can be wrought up, instead of requiring, like timber, a long period to season it, the great specific strength of iron as compared with that of wood, its freedom from the attacks of the worm and the evils of dry-rot, and the union of strength with toughness, which is a characteristic property of wrought iron; and, it may be added, the great facility which iron affords for precision of workmanship in forming the mould of a vessel. In the leading article of the *Shipping and Mercantile Gazette* of 11th March 1846, among other interesting particulars on this subject, it is remarked that iron ships have the advantage over timber built ships of being not only stronger in their build, but much lighter in proportion to their admeasurement, and that consequently they can carry more cargo.

In tropical climates, however, iron vessels are found to get very foul in the bottom in a remarkably short space of time, and, to avoid the evils to which this would give rise, frequent cleaning becomes necessary, which is attended with considerable expense.

See *Horse-iron, Reeming-iron,* and *Caulk.*

ANGLE-IRON. A general term for longitudinal strips of iron, of various sizes, having their edges turned up at an angle to each other. Angle-iron is used for the frames or "ribs," and the knees, &c. of iron vessels, and also in forming the corners of steam-boilers, water tanks, &c.

IRON-BOUND COAST. A coast which abounds with dangerous rocks, or, to use the words of Captain Chamier, "which presents nothing but abrupt hills or cliffs rising perpendicularly from the high-water mark."

IRON-SICK. The condition of a vessel when the iron work becomes loose; or, more particularly, when the iron bolts or nails in her have become so much corroded as to allow the entrance of water.

IRONS. *A ship is said to be in irons* when, through mismanagement, she will cast neither one way nor another.

ISLAND. A portion of land entirely surrounded by water.

ISTHMUS. A narrow neck of land uniting a peninsula with the adjoining land, or connecting two continents.

JACK, or UNION-JACK. A small union flag formed by the intersection of the red and white crosses. In merchant ships it is bordered with white. See *Flag.*

JACK-CROSS-TREES. See *Cross-trees.*

JACK-SCREW. A purchase consisting of wheels and pinions, which work inside of a wooden frame, and act upon an iron bar called the *spear:* used in stowing cotton, flax, and other goods.

JACK-STAFF. A staff set up on the outer end of a vessel's bowsprit, to hoist the union-jack upon.

JACK-STAYS. Ropes stretched taut along a yard, or

iron-rods or strips of wood fixed to the yard, for bending the head of a square sail to. There are sometimes jack-stays used for fore and aft sails to traverse upon, instead of hoops sliding up and down the mast: these formerly received the name of *traverse-horses*.

JAM. A term applied to the act of anything being confined, and also to the act of confining it, so that it is immovable or cannot be moved without difficulty.

JAWS. Pieces of wood fixed upon the inner ends of booms or gaffs, forming a semicircle so as to enclose the after part of the mast. The points of the jaws are sometimes called *horns*.

The Jaw-rope, is a rope attached to the jaws to prevent a gaff from coming off the mast.

JEERS. Strong tackles for hoisting lower yards. The ropes employed to hoist upper yards, gaffs, and sails are called *Halyards*.

JERQUING *a vessel:* a search performed by an officer of the customs, after she is unloaded, to see if there be any unentered goods concealed.

JERQUER. See *Customs*.

JETSAM. See *Derelict*.

JETTISON. The throwing of articles overboard for the safety of a vessel in distress: the chief causes whereof are to lighten her at sea in a storm, or when a leak has been sprung, or when pursued by an enemy, or for the purpose of floating her when she accidentally gets aground.

To make such a step legal, it is essential that the ship be in distress, and that this sacrifice of a part of the property be made for the preservation of the rest. "The general principle to be adhered to by the master" (says Mr Stevens in his *Essay on Average*) "is to consult the most experienced of the crew and the supercargo (if there be one on board) and to make as minute an entry in the journal or log-book as the nature of the case may require, and immediately on his arrival to note, and as soon after as possible extend his protest."

Loss by jettison forms a subject of general average; the

property saved is made to contribute proportionally to make good that loss, the value of the jettisoned articles thus replaced being also included among the sums liable to such contribution. The freight of goods jettisoned is likewise paid in general average, and is made to contribute its proportion; but, if goods be shipped in lieu of those which were thrown overboard, the freight thereof (less the charges of shipping them) should be deducted from the freight of the goods jettisoned.

When the average is adjusted at the port of loading, or the goods are replaced there, the amount to be allowed in general average is their cost free on board: if adjusted at the port of discharge, it is the estimated cash market price there of the jettisoned goods, deducting all the charges that would have attached to them, as freight, duty, and landing charges; again, if the voyage have necessarily terminated at an intermediate port, the value is regulated by the price current at that port. The value to be allowed for ship's stores sacrificed in this way is the amount at which they are or can be replaced.

If goods got on deck for the purpose of jettison, or in order to ease the ship when in distress, be washed off the deck—or if goods be put into boats or lighters, in order to float the ship when stranded, or to enable her, under extraordinary circumstances, to pass over flats and shoals, and the boats be lost—the consequent loss of the goods is to be treated as a jettison. See *Deck-cargo.*

(*Stevens's Essay on Average.* See also *Park on Insurance).*

JETTY. A projection of stone or wood (but generally formed by piles of wood driven into the ground), affording a convenient place for landing from, and discharging vessels or boats; or simply intended as a breakwater in forming an entrance to a harbour.

Such a projection, whether of wood or stone, extending from the outer end of a wharf, is called a *jetty-head.*

JEWEL-BLOCKS. See *Block.*

JIB. A large sail extended on the *jib-stay* to the extre-

mity of a boom called the *jib-boom* which runs out from a vessel's bowsprit. It gets the name of the *standing-jib*, in contradistinction to the *flying-jib*. See *Brail* and *Traveller*.

The flying jib sets outside of the jib upon a boom called the *flying jib-boom*; and the *jib o' jib* outside of that. The last is not in common use.

JIB-BOOM. See *Jib*.

JIB-GUYS, or JIB-BOOM-GUYS. Ropes attached to the jib-boom end, and leading in upon deck through the sprit-sail-yard-arms, or the ends of the whiskers, in order to act as a support to the jib-boom. They are called *standing guys*: there are sometimes also guys attached to the jib-traveller, which get the name of *travelling guys*.

JIB-STAY. The stay on which the jib is set.

JIB-TOPSAIL. A light sail set on the topmast stay of a fore-and-aft rigged vessel.

JIB-TRAVELLER. See *Traveller*.

JIBE. [GYBE].

JIGGER. A tackle used on that part of a cable which is within the windlass in the time of weighing the anchor, to haul back the slack of the cable from the windlass.

Also, a small square sail rigged out on a mast and boom from the stern of a boat: Such a sail is sometimes used in a fore-and-aft rigged vessel, especially in the event of splitting the mainsail, or breaking the main-boom.

BOOM-JIGGER. A tackle used in some large ships for rousing out the topmast studding-sail-booms.

BUNT-JIGGER. A gun-tackle purchase (that is to say, a tackle composed of a rope rove through two single blocks) with a hook attached to each block; used in large vessels to hook on to the eyelet holes in the bunt of a sail, in order to bowse it up when furling.

JIMBALS [GIMBALS]. See description of *Compass*.

JOGGLE. See *Jugle*.

JOLLY-BOAT. See *Boat*.

JOURNAL. The same as *Log-Book*.

Also, a name for the turning part of a shaft—in other

words, that part of the shaft or spindle of a windlass, winch, or other machine, on which it revolves.

JUGLE, or JOGGLE, in shipbuilding, a notch in the edge of a plank to admit the narrow butt of another, as of the narrow end of a steeling-strake. There are also notches called *joggles* at the ends of paddle-beam iron knees outside, to act as a stop to the diagonal iron stay which is extended between the arms of each knee. See the article *Paddle-Wheels.*

JUMP-JOINTED. See *Carvel-Built.*

JUNK. Remnants of old rope cut up usually for the purpose of making points, mats, gaskets, sennit, oakum, or the like.

Also, a name for a large flat bottomed vessel common among the Chinese. It has three masts, one or more of them rigged with lùg-sails made of cane or bamboo, and on the starboard bow a short bowsprit: the hull rises high at the stem and stern.

JURY-MAST. A temporary mast rigged in place of one which has been carried away by accident, or erected in a new vessel for the purpose of navigating her to the place where she is to be properly fitted out.

A description of a JURY-ANCHOR, that is to say, a contrivance for temporarily putting an anchor to use when its shank happens to be broken, is given by Commander A. Milne, in the seventh volume of the *Nautical Magazine.*

JURY-RUDDER. Of the various plans for supplying a vessel with a temporary rudder when an accident has befallen the original one, we may notice the following ingenious method, which has been adopted in the United States of America, and very justly recommended by Captain Basil Hall. Let a spare topmast be cut to the required length of the stock, making the heel of the mast to answer for the rudder-head; use the remainder for the after part of the rudder, and leave a space near the lower end of the stock wherein to stow a quantity of shot, pig-iron, or the like, as ballast to assist in keeping the rudder end on. Plank it up on both sides with slabs or deals bolted or nailed to the main and after parts of the rudder, and let there be a strong shoe-piece

bolted horizontally under all. Let the main piece have two mortice holes cut in it, one near the lower rudder-iron, the other about two-thirds up, through each of which pass a chain with a round turn, and carry the ends of these chains forward along the ship's counter, so that their crossings may lie against or embrace the sternpost. Clap tackles on the ends of these chains, and bowse them taut forwards in order to bind the rudder firmly against the sternpost. For greater security, also, the rudder may be hung by a rope or small chain passed through the fid-hole of the topmast, and made fast round a bar laid across the rudder-hole on deck. Bolt two spars to the upper end of the broad part of the rudder, one on each side, and lash them together in order to form a tiller projecting out from the rudder at an angle of elevation: make fast the tiller ropes to its outer end, and lead them to according to the steering wheel.

In Lieutenant E. Jenning's "*Hints on Sea-risks,*" there is a description given of a jury rudder for the Royal Navy *per* Admiralty order of 28th January 1839.

KECKLING. Old rope wound round cables to keep them from chafing.

KEDGE. See *Anchor*. *To kedge* or *to warp* a vessel, is to move her along by means of a kedge and warp run out from the ship.

KEEL. A flat bottomed vessel used on the Tyne to carry coals: it contains on an average 8 Newcastle chaldrons = 15½ London chaldrons = 21 tons, 4 cwt., *(Waterston's Cyclopaedia of Commerce).* This is commonly adopted as a measure of burden for colliers.

KEEL. The main and lowest timber in a vessel, extending from the stem to the stern-post, and forming the basis of the whole structure. In a small vessel, it may consist of one piece throughout, but in vessels of a larger size, the keel is formed of several pieces, which are scarphed together endways. *(Shipwright's Vade Mecum; Hedderwick's Treatise on Shipbuilding.)* See Plate II., fig. 6.

A description of the *Safety Keel* invented by Mr Oliver

Lang, of Woolwich Dockyard, is given in the first volume of the *Nautical Magazine;* its construction is such that the planks and outer keels may be torn away by the ship striking on rocks, without any water being consequently admitted into her.

In the construction of iron vessels, the keel is formed of one or more plates of iron having a concave curve on the upper surface, to afford a channel, or (as it may be termed), a limber passage for water throughout the ship's length.

See BILGE KEELS, and SLIDING KEELS.

FALSE KEEL. A second keel fastened in a slight manner under the main keel, which, in case of the ship striking the ground, it may be the means of preserving. If the ship be coppered, it protects the copper from being rubbed off the keel; the false keel itself should in this case likewise be sheathed with copper. It has also the effect of making the ship hold a better wind.

KEELAGE. A local term for a duty charged on a vessel coming into or using a port or harbour.

KEELSON, or KELSON. An internal keel placed immediately above a vessel's floor-timbers, and bolted down through every other floor and the keel. Its use is to give additional strength to the ship fore and aft, as well as to afford shifts to the scarphs of the keel, and to secure the frames down to the keel and deadwood, forming a centre of connection for the whole parts. (Plate II., fig. 6.)

It is called the *Main Keelson,* to distinguish it from the *Keelson Rider,* or *False Keelson,* which is a piece of timber wrought longitudinally over the top of the former. (Plate II., fig. 6.)

SISTER KEELSONS are additional keelsons laid on the floors, one on each side of the main keelson, to afford additional strength and stability, especially to prevent the ship sagging by the weight of the masts.

BILGE KEELSONS are keelsons fitted on the inside of the bilge, to afford greater strength and security, in vessels which are in the practice of loading heavy cargoes, such as iron, copper-ore, &c. These also get the name of *Sister Keelsons.*

KEEP AWAY. To alter the ship's course to leeward by sailing further off the wind.

KEEP *the land aboard*, or KEEP A GOOD HOLD OF THE LAND: to keep as near it as can be done with safety.

KEEP YOUR LUFF! An order to sail with the vessel's head as close to the wind as possible. KEEP YOUR WIND, and KEEP HER TO, are phrases implying the same.

KELSON. [KEELSON.]

KENTLEDGE. Permanent ballast, consisting generally of pigs of iron cast in a peculiar form. It has been decided that such ballast cannot be held as part of the ship's furniture or stores, (*Shee's Edition of Tenterden*). See *Limber Kentledge*.

KETCH. A vessel with two masts, rigged somewhat like a galliot.

BOMB-KETCH. A vessel of the above description fitted up as a bomb vessel.

KEVELS, or CAVILS, in shipbuilding, pieces of oak plank shaped like timber heads, going down through a notch or mortice in the rail: they answer the purpose of timber heads for belaying ropes to.

KEY, in shipbuilding, a piece of dry wood used to wedge the deck planks, the parts of the rudder-case, or any pieces of wood, tightly to each other.

KILN, STOVE, or STEAMER. A particular sort of long wooden box, connected by a metal pipe with a boiler; used for steaming planks in order to make them pliable. In the Royal Dockyards, there are similar trunks of metal, open at the top, employed for *boiling* the plank.

In Creuze's Treatise on Naval Architecture, a method, proposed by Mr Mackonochie, is described, of saturating timber with oil during the process of steaming: it is done in a steam-tight chamber by alternately subjecting the timber to the action of the steam, and condensing it, until the whole of the air, gases, and natural sap are withdrawn from the wood, which is then plunged into oil. This is considered highly serviceable in preserving the timber.

KINK. A twist in a rope. *To kink*, is to twist.

KNEES. Crooked pieces of timber, or of iron, used to bind the beams to a vessel's sides; the one tail or arm of the knee being bolted to the framing, and the other to the beam. Of these, such as have one of their arms fayed vertically to the ship's side are called *hanging-knees;* such as are fixed parallel to, or with the hang of the deck, are called *lodging-knees,* or *deck-beam-knees;* and such as cross the timbers in a slanting direction, *diagonal-hanging-knees.* See the latter article, and also *Cast-knees, Standard-knees,* and *Transom-knees.*

There are knees used for supporting *the windlass bitts,* and *winch bitts.* See also description of *Head-Rails.*

The term *knee-timber* is applied to any piece of timber that is very crooked, such as the pieces used for knees, rising-floors, and crutches.

KNEE OF THE HEAD. See *Cutwater.*

CHEEK-KNEES. See *Head-Rails.*

KNIGHT-HEADS, or *Bollard-Timbers,* in shipbuilding, two pieces of timber bolted one on each side of a vessel's main stem; between these the bowsprit is fixed, (*Hedderwick's Treatise.*) See plate II., fig. 7.

KNITTLES, or NETTLES. The halves of two adjoining yarns in a rope, twisted up together for pointing, or grafting.

Also, small line made of rope yarns, laid up as a rope, or as sennit, used for seizings, or for hammock clues.

KNOT. A division on the log-line answering to a mile of distance, or rather bearing the same proportion to a mile as half a minute does to an hour. In nautical language, the words *mile* and *knot* are used synonymously: implying a *geographical mile,* or as it is sometimes called the *nautical mile.* "In one degree of latitude, there are sixty nautical miles, or knots, while there are sixty-nine English statute miles, and about a thirteenth part (strictly 140 yards) contained within the same limits." See *Log-Line.*

Also, a mode of joining or fastening ropes. The different kinds of knots used by seamen may be found somewhat fully explained and illustrated in *Dana's Seaman's Manual.*

KNUCKLE, or NIPPLE, in shipbuilding, a sudden angle made on a timber, such as the knuckles of the long stern timbers at the archboard, *(Hedderwick's Treatise.)*

KRENG. See FLENSING.

LABOURSOME. A ship is said to be *laboursome* at sea when, either from some defect in her construction, or owing to improper stowage, she is subject to *labour*, that is, to pitch violently in a heavy sea, and roll to windward against both wind and sea, whereby she may be strained and injured. See *Rolling*.

It may be proper here to notice, that the springing of a leak by the mere working and straining of the vessel is not considered to form a claim against underwriters, but held as wear and tear of the voyage.

LACING. Rope used to lash a sail to its yard, or gaff, or a bonnet to a sail.

LADDER. A well known frame with steps. There are various kinds of ladders used about a ship; such as the *Hold*-ladders, *Forecastle*-ladders, &c., for getting into or out of these parts of the ship.

ACCOMMODATION-LADDER. A light sort of stair-case made of wood, having rails or man-ropes on each side of it; used in some vessels to be hung over the side for the convenience of people coming on board or going ashore.

SIDE-LADDER. A ladder made of rope with wooden steps, used for the side of a vessel. In large ships of war, there are steps bolted to the side for this purpose.

STERN-LADDERS, are suspended from the sterns of large ships for convenience of getting into or out of the boats.

LADEN. See *Light*.

LADING. A vessel's cargo. See *Bill of Lading*.

LADLE *for a gun;* an instrument used for drawing any part of the charge of the gun that the worm may leave behind, and also for drawing shot.

LAGAN. See *Derelict*.

LAGOON, is explained, in *Brockhaus' Conversations Lexicon*, to be "the name given to that part of the coast of

the Adriatic, which the sea, by breaking through a dam formed by nature, has inundated and afterwards converted into many small lakes and islands. On sixty such islands Venice is built. The lakes, which especially bear the name of 'Lagoons,' swell very much when the sea is high, but at other times become so shallow that their exhalations are dangerous to health." The term seems, in like manner, applicable to any such lakes or inlets formed by accumulations of soil which has been carried down and deposited by a river or stream. It is also applied to certain inlets of the sea, such as the Blewfield Lagoon and Pearl Lagoon on the Mosquito Coast in North America.

LAID-UP. The situation of a vessel when partially or wholly dismantled, and moored in a harbour unemployed.

LAND-BREEZE. See *Breeze.*

LAND-FALL. The first sight of, or the making of land, after being out at sea. *A good land-fall,* is when a vessel makes the land as intended or expected: *a bad land-fall,* the reverse.

LAND-LOCKED. A harbour or roadstead is said to be *land-locked* when it appears as if it were entirely surrounded by land.

LAND-MARK. Any object which serves to make the land known at sea, or as a guide in taking a harbour or passing through any channel.

LANDING-STRAKE, in a boat, the uppermost strake of plank but one; that is, the strake immediately below the sheer-strake.

LANDING-SURVEYORS and LANDING-WAITERS. See *Customs.*

LANGRAGE. Old bolts, nails, pieces of iron, and the like, made fast together; used to increase the destructive effects of the fire of a gun.

LANIARDS. [LANYARDS.]

LANTERN. A well known machine used as a case for light. In ships of war and other large vessels there are *poop lanterns, top lanterns,* and so on, named after the places where they are carried. *Signal lanterns,* are those

employed for the purpose of directing the course of other ships in a fleet or convoy, or avoiding collision at night.

Every steam-ship is required to carry one lantern before the funnel, and another about the forepart of the ship or on the bowsprit, in order to show the direction of her course to other vessels at night.

The lanterns which are used, one between each gun, in a ship of war during action, are termed *fighting-lanterns;* they are enclosed in a case to secure them until required.

LANYARDS or LANIARDS. Ropes rove between every two dead-eyes, forming a sort of tackle for setting up the shrouds of a vessel and keeping them at the proper stretch.

There are also short lanyards used for raising, lowering, or lashing in the ports, and for other purposes.

LAP-JOINTED. See *Clincher-Built.*

LAP-SIDED. A term expressive of the condition of a vessel when she will not swim upright, owing to her sides being unequally balanced.

LARBOARD, or LARBOARD-SIDE. The left side of a ship or boat when you stand with your face towards the bow. The term *Port* is now ordered by the Lords Commissioners of the Admiralty to be used on all occasions throughout the Royal Navy instead of *Larboard.*

LARBOWLINES. See *Starbowlines.*

LARGE. See *Free.*

LASH, in sea phrase, means to make fast anything with a rope. The rope so employed is called a *lashing.*

LASTAGE (a term derived from the German *Last*), implies the lading of a vessel, or more particularly stowage room for goods: thus, when a ship is laid on for a general cargo at any port in the Baltic or elsewhere, the shippers who may agree for a certain number of tons of lading are said to "engage Lastage."

LATCHINGS. Loops on the head rope of a bonnet, by which loops it is lashed to the foot of the sail.

LATEEN SAIL. A long triangular sail bent at its foremost leach to a yard called a *lateen yard,* which hoists obliquely to the mast. The yard is attached to the mast by

means of halyards, and, in working the boat or vessel, is shifted from side to side by means of a tack.

LATITUDE *of any place on the globe;* its distance from the equator, measured in degrees upon a meridian towards either pole; it is called North or South Latitude, according as the place is in the Northern or Southern Hemisphere, and never exceeds 90 degrees, that being the distance of each pole from the equator. THE PARALLEL OF LATITUDE of any place, is a circle passing through it parallel to the equator. THE DIFFERENCE OF LATITUDE between any two places, is an arc of a meridian contained between their parallels of latitude; in other words, the least distance between their parallels of latitude: it can never exceed 180 degrees. See *Complement.*

THE LATITUDE *of any object in the heavens,* is an arc of a circle of longitude contained between the centre of that object and the Ecliptic: it is called North or South Latitude according as the object is north or south of the Ecliptic.

(*Norie's Epitome of Navigation and Nautical Astronomy*).

LAUNCH. To send a ship or boat off a building or repairing slip, or off the shore, into the water: the planks or logs laid on a building slip for the bilge-coads to slide upon are termed *Bilge-ways* or *Launching-ways.* See also *Boat.*

LAUNCH-HO! High enough. The order to let an upper mast settle down on the fid after it has been swayed up.

LAUNCHING-WAYS. The same as *Bilge-ways.*

LAY IN *upon a Yard:* to go nearer the middle of it. *To lay out upon a Yard,* is to go nearer the yard-arm.

LAY OUT, or LAY OUT ON YOUR OARS. The same as *Give-way.*

LAY *of a rope:* the direction in which its strands are twisted.

LAY-DAYS. The number of days stipulated in a charter party, or allowed by custom, for shipping or discharging a cargo. See *Demurrage.*

LAYING OFF or LAYING DOWN, in shipbuilding, trans-

ferring the plans of the ship from the paper to the full size on the floor of the moulding loft.

LAZARETTO. A name given to an hospital ship for the reception of the sick or of persons supposed to be infectious, and to those enclosed buildings common in the Mediterranean ports, wherein ships' crews, passengers, and goods are lodged for the performance of quarantine.

It is also the name of a place parted off at the fore part of the lower deck, in some large merchant ships, for the convenience of laying up the provisions and other stores necessary for the voyage.

(Shipwright's Vade Mecum—Waterston's Cyclopaedia of Commerce).

LEACHES. The edges of a sail at its sides.

LEACH-LINE. A rope used for hauling up the leach of a course.

LEACH-LININGS. See *Linings.*

LEACH-ROPES. See *Boltrope.*

LEAD. The name given to a conical piece of lead with a line called the *lead-line,* attached to its upper end. The *hand-lead,* is that used for sounding in rivers, harbours, or shoal water. The *Deep-sea-lead,* which is of a larger size, is used for sounding at great depths; in order to haul it in, the line is rove through a block seized to the rigging by a tail-rope. The man that heaves either of these is called the leadsman.

The following account of the way in which these lines are marked, is given by Mr Dana in his *Seaman's Manual,* along with general directions as to sounding. "The proper way to mark *a hand-line* is, black leather at 2 and 3 fathoms; white rag at 5; red rag at 7; wide strip of leather with a hole in it, at 10; and 13, 15, and 17 marked like 3, 5, and 7; two knots at 20; three at 30; and four at 40, with single pieces of cord at 25 and 35. *The deep-sea-line* has one knot at 20 fathoms, and an additional knot at every 10 fathoms, with single knots at each intermediate 5 fathoms: it sometimes has a strip of leather at 10 fathoms, and from 3 to 10 is marked like the hand line." There is often a blue rag at 13. See the article *Sound.*

LEADING PART. See *Tackle.*

LEADSMAN. See *Lead.*

LEAGUE, is understood by seamen to mean three *nautical* miles.

LEAGUER, a sort of large cask.

LEAK. When the contents of a cask ooze out through any accidental chink, it is said to leak. *A ship leaks,* when water is *admitted* in this way; and when it commences to do so, she is said to *spring a leak.* Either of them is then said to be *leaky.* See *Average* (*Particular, on Ship).*

In vol. vii. of the *Nautical Magazine* there is a description of an instrument called a "WELL-GUAGE and LEAK ALARM," patented by Mr J. H. Fiske, Portsmouth; this shews, by means of a scale, the increase or diminution of water in a ship's well, while to the back of the frame there is attached an alarm, which is acted upon by a lever, and strikes a bell to call the attention of those on duty to any particular increase of water in the well arising at any time from leakage.

LEAKAGE. The act of leaking. The loss of any liquid commodities, or the quantity which runs out, by leaking. Under policies of insurance it is the practice of Lloyd's to consider things liable to *breakage* or *leakage* as free from particular average, (in other words, that claims for partial loss or damage thereby are not recoverable), "unless it can be shewn that the ship had struck the ground with such force as to make it probable that she had thereby deranged her stowage." *(Stevens on Average).* See *Freight.*

LEAN, or CLEAN, signifies that a vessel is sharp; in opposition to *full.* Thus she is said to be "clean in the run," or "clean forward."

LEDGES. See *Carlings* and *Coamings.*

LEE. That part towards which the wind is directed, and which is said to be *to leeward;* the quarter whence it blows being called *to windward.*

If a vessel have the wind on her starboard side, this will be the *weather side,* and the larboard will be the *lee side.*

A current running to leeward is said to have a *leeward set*; the reverse is a windward set.

Under the lee of anything, is when you have the object between you and the wind.

See *A-lee,* and *Bring by the lee.*

LEE-BOARD. A long flat piece of wood attached at one end to each side of a vessel by a bolt on which it traverses: when sailing on a wind, the one on the lee side is let down, and reaching below the keel, it checks the ship from drifting fast to leeward. Lee-boards are used chiefly in Dutch vessels, which are built full and flat, and have keels of little depth; and also in barges such as those which are common on the river Thames.

LEE-GUAGE. See *Guage.*

LEE-LURCHES. See *Weather-Rolls.*

LEE-SHORE. A shore against or towards which the wind is blowing.

LEE-SIDE. See *Lee.*

LEE-WAY. What a vessel loses by drifting to leeward in her course: *the angle of leeway,* is the angle contained between the line of her apparent course and the line she really describes through the water.

LEEWARD. See *Lee.*

LEEWARDLY. See *Weatherly.*

LEECH. [LEACH].

LEND A HAND. Assist.

LENGTHENING-PIECE. See description of *Futtocks.*

LET IN. To fit any part of one piece of timber into a space made in another to receive it.

LETTER-BOARD. The same as *Name-Board.*

LETTERS of MARQUE. See *Privateer.*

LEVEL LINES. See *Shipbuilding.*

LEVER (or SPANNER) *of Parallel motion.* See description of *Steam Engine,* Sect. 21.

LIE ALONG. A vessel is said *to lie along,* when she leans over with a side wind. *To lie along the land,* means to keep a course nearly parallel to it.

LIE-TO. See *Bring-to.*

LIEUTENANT, in the Royal Navy, an officer next in

rank to a commander. "A ship of the 1st rate, carries eight lieutenants, besides supernumeraries. Ship's of the 2d, 3d, and 4th rates, &c., have respectively one less than the number appointed to the preceding rate." *(Brande's Dictionary of Science, Literature, and Art).*

LIFE-BOAT. A boat constructed so that it cannot sink or be swamped; used in saving the lives of shipwrecked persons.

A screw-propeller driven with the hand by means of crank handles would seem to be a valuable auxiliary power to a life boat, more especially if placed in the fore end of the boat, where it would act with greater effect in keeping her head steadily to the wind and sea.

LIFE-BUOY. See *Buoy.*

LIFE-LINES. Ropes stretched from the lift to the tye on each side of an upper yard, a little above it, for the security of the men when reefing the sail.

LIFTS. The ropes which come from the mast heads to the ends of yards to suspend them square and keep them steady: those used for upper yards are termed *standing-lifts;* those for lower yards get the name of *running-lifts,* being employed also to top up the yards. (Plates III. and IV.)

See the article *Topping-Lifts.*

LIGHT. A ship is said to be light, either when she is in ballast or has a light cargo on board. *Laden* is the opposite term.

To Light along a rope or *sail,* means to lend assistance in hauling it along, by lifting some part of it in the required direction.

LIGHT-HANDED. A term implying that a vessel is short of her complement of men.

LIGHT-HOUSE. An edifice on the sea-coast, or on any island or rock, whence lights are exhibited for the guidance of ships. Accounts of light-houses are given in Steel's "*Shipmaster's Assistant.*" We may notice two publications on this subject; namely, "*Lighthouses arranged by Captain the Hon. J. F. de Ros, R. N.;*" and "*Notices and Information to Mariners regarding the al-*

teration and erection of Lighthouses, Beacons, Buoys, Sea-marks, &c., throughout the world, by James Daniel," which latter is issued in quarterly numbers by Mrs Taylor of London.

LIGHT-ROOM, in a ship of war, an apartment lighted by sperm. lamps, &c., separated from the magazine by a bulkhead, in which bull's-eyes are inserted to allow the light to strike upon reflectors fixed for that purpose at the opposite side of the magazine.

LIGHT-WATER-LINE. See *Water-line.*

LIGHTER. A large boat or vessel with heavy bearings, generally used in loading and unloading vessels.

See *Gabart* and *Lump.*

LIGHTERAGE. The charge made for the hire of a lighter.

LIMBERS, or *Limber-Holes.* Square holes beneath a vessel's floor-timbers on each side of the keel; forming, with the open spaces left between the ends of the first futtocks and each side of the keel, a channel by which water may run towards the pumps throughout the length of the ship. The channel thus formed is sometimes called the *Limber-passage*, or simply the *Limbers.*

The Limber-holes are in some parts of Scotland called *Drawbellows,* and hence the feather-edged pieces of board which in many cases are put on to form these holes (instead of cutting into the floor-timbers, which would tend to weaken them) are there termed *Drawbellow-boards.* Instead of using these feather-edged pieces, however, the water-course or limber-holes are more commonly formed by a groove cut out of the inside of the garboard-strake, or out of the chock which is generally required (especially in sharp bottomed vessels) to make good each floor-timber to its form at the angle next the keel.

LIMBER-BOARDS. Short pieces of plank placed over the limber-passage to keep out dirt and other obstructions. One edge of them is fitted to the limber-strake, and the other bevelled against the keelson. They are fitted in short pieces, for the convenience of readily taking up one or more of them

in order to clear out the passage when required. (Plate II. fig. 6).

LIMBER-CLEARER. A small chain which, in some vessels, is rove fore and aft through the limber-passage, in order to clear it when necessary by hauling the chain backwards and forwards.

LIMBER-KENTLEDGE. Pigs of iron fitted to go down between the floor-timbers, as ballast to lower the ship's centre of gravity: they also serve the purpose of limber-boards in preventing dirt getting down into the limbers.

LIMBER-PASSAGE. See description of *Limbers*.

LIMBER-STRAKE. The first plank of the ceiling next the keelson, wrought over the lower ends of the first futtocks, and for their security bolted over them to the floors. It is sometimes called the *futtock-plank* or *foot-waling*. See the article *Ceiling*. (Plate II. fig. 6).

LINE. The order of battle. *A ship of the Line*, is one of sufficient force (viz. from 120 to 74 guns) to have a station in the line of battle.

Small ropes get the name of *Lines*.

In shipbuilding, certain *lines* are used in the plans for determining the shape of the vessel's body. These are enumerated in the article *Shipbuilding*.

See also *Equator*.

LINERS. A name given to packet ships regularly trading to and from certain far distant ports beyond seas.

Also a name sometimes applied by seamen to ships of war and to their crews.

LINING. A piece of cloth sewed upon a sail, as the *buntline-cloths*, *leach-linings*, and *top-linings*, which are used to keep the buntlines, leach-lines, and tops, respectively from chafing the sail.

In shipbuilding, it means thin dressed board, &c., nailed over any rough surface to give it a finish, and so on.

See *Top-lining* and *Windlass*.

LIST. A vessel is said *to have a list*, or *to list*, when she inclines or lies over to either side.

LISTING. A narrow strip cut out off the edge of a

plank in order to expose the vessel's timbers for examination; or in order to put in a new piece instead of altogether replacing a defective or damaged plank.

LIZARD. A piece of rope with one or more thimbles spliced into it. This is used in a vessel for sundry purposes.

LLOYD'S. The name formerly given to a subscription coffeehouse, now to a set of subscription rooms in the Royal Exchange of London, wherein a society of individual underwriters transact business, their joint affairs being under the management of a committee.

LLOYD'S AGENTS, or *Agents to Lloyd's*, are persons appointed in various parts of the world, including the outports of the United Kingdom, by the associations of underwriters at Lloyd's, and in Liverpool, Glasgow, &c., for the purpose of forwarding to their constituents accounts of the arrivals and departures of vessels, of losses or casualties occuring, or any other information that may be important in guiding the judgment of the individual underwriters upon the nature of the risks offered to them; and also for the purpose of assisting masters of merchant vessels in cases of misfortune. With regard to the last mentioned branch of their duty, Mr Lorimer, in his *Letters to a Young Master Mariner*, notices that on such occasions it is not absolutely necessary that their services should be called in, or their directions implicitly followed, whether right or wrong; but that, being for the most part intelligent and experienced men, it is generally prudent and advisable for the shipmaster to have their assistance. In ordinary cases of general and particular average, it is the practice to state their fees as a subject of general contribution.

The following is an abstract of the Instructions which are issued by the committee to the persons appointed to act as agents for the subscribers to Lloyd's, "and which are to be exhibited on all occasions where the agent may be required to act, so that no misunderstanding may arise with parties assured, or their representatives, as to the extent of authority vested in the agent." In the "*appointment*" of the agents, it is observed, that "no power from the subscribers to

Lloyd's, "can divest the assured, their agents, or assigns, or the masters of vessels, of that right over property which the law has given them; but it is presumed that the assured, or their representatives, will readily avail themselves of the assistance of an agent, who is appointed by the general body of subscribers to act on their behalf, and whose co-operation will facilitate the settlement of loss or average, with the underwriters."

1. The agent is to furnish prompt and regular advices of the arrival and sailing of vessels; intelligence of ships being spoken with; of accidents or other circumstances of danger or distress that may occur; of the appearance of enemy's cruizers or privateers: and generally such information as may be of importance to the subscribers to Lloyd's.

2. "When vessels are in distress, or are driven on shore in the neighbourhood of the port where the agent resides, he is to offer to the master such services as the nature of the case may require; and in cases of shipwreck, where neither the owners of the vessel or goods, nor their representatives are on the spot, the agent is to take such steps as he may deem the best for the preservation of the property, giving immediate advice of the circumstances to the assured, and following their instructions in all cases where he can obtain them."

3. In cases of repairs to vessels "under average," he is to see that intelligent professional men be appointed as surveyors, and that in their survey and estimates, they distinguish, as far as possible, between the damage sustained during the voyage on which the vessel is actually engaged, and the damages or defects existing prior thereto. "He is also to take care that the wages of the crew are not carried to the average account, either directly or indirectly. When attempts are made to condemn ships as unseaworthy, that have sustained damage, the agent is to use every means in his power to prevent such condemnation, if it is evident that the vessel may be repaired, so as to enable her to prosecute her voyage. And in case she cannot be repaired, so as to proceed, and her condemnation becomes unavoidable, it will then be his duty carefully to investigate whether the con

demnation is occasioned by any natural defect or decay. If a ship arrive in a disabled state at an intermediate port, so as to be incapable of performing her voyage, the agent is to offer to co-operate with the assured, or his representative, in procuring a conveyance for the cargo to its original destination, in the best and most expeditious manner; and to protest against any sale of the cargo for account of the underwriters unless unavoidably necessary."

4. It frequently happened, when a vessel was captured and recaptured, that instead of the salvage being paid, and the vessel proceeding to her port of destination, both vessel and cargo were, by authority of the Courts of Vice-Admiralty, sold for the payment of salvage, and the loss of the underwriters was thereby much increased: but by an order of the Privy Council, dated April 30th, 1813, it is provided that in such cases "on a claim being given for the ship by the master, or, in his absence, by the mate, and for the cargo, by the supercargo or master, or by the mate in the absence of the master, the Court shall direct a valuation of the ship and cargo to be made by appraisement, without sale or unlivery, so far as the same shall be practicable; and on such valuation, to be approved and confirmed by the Court, shall direct the ship and cargo to be restored to the person or persons aforesaid claiming the same, on payment of the proportion decreed to be paid to the captors, in lieu of salvage, and of such costs and expenses as shall be directed by the Court; and in default of such payment, the Court shall order and direct so much of the cargo to be sold as shall be sufficient for the payment of the salvage and expenses due thereon; and further, so much of the said cargo as shall be sufficient to pay the salvage and expenses due on the ship, if the person or persons to whom the cargo shall be restored by decree of the Court shall consent thereto. And it is further ordered, that in no case shall the Court proceed to order the ship or goods to be sold or unlivered, save as aforesaid, unless such sale or unlivery shall, owing to special circumstances, become necessary; in which case the reasons on which the Judge shall proceed to make such order, shall be

noted summarily in the minutes of Court: and the Right Honourable the Lords Commissioners of the Admiralty, the Judge of the High Court of Admiralty, and the Judges of the Courts of Vice Admiralty, are to take the necessary measures herein as to them may respectively appertain." (Signed) "JAMES BULLER."

"It is therefore incumbent on the agent to endeavour upon every occasion to take such steps as appear requisite for an adjustment of the salvage, in order that the vessel may proceed with her cargo to her port of destination. Advances for the amount of salvage and charges may, in most cases, be effectually secured by bills of exchange on the owners, which is the preferable mode, or by a bottomry bond on the ship" freight "and cargo; but should the agent have reason to entertain any doubt as to the security of his advances, he may," under the above mentioned circumstances, "obtain an order from the Court for the sale of so much of the cargo as shall be sufficient to pay the salvage and charges."

Where salvage, or remuneration for assistance rendered to vessels, is claimed, "it is proper for the agent to attend the meetings of the commissioners, magistrates, or other persons legally authorized to determine the amount, in order to rebut any exaggerated statements on the part of the salvors, by the evidence of the master and crew."

5. "In no case is the agent to accept an abandonment of either ship or goods, as the representative of the underwriters, but leave the parties who abandon to act upon their own responsibility."

6. When called on by the consignees to inspect goods which have been damaged by sea water, and to certify the damage, the agent is to act as a surveyor only; and in this capacity to require the presence at such survey of the master of the vessel by which the goods have been imported who is to sign the certificate of the damage. The document containing these Instructions then proceeds in the following terms: "In case of refusal of the master to attend, or that he be prevented attending, he is to be informed that such refusal or alleged cause of prevention, is to be noted by the

agent, which he is required to do, upon any certificate he may grant; and in all ports where it is customary to discharge goods into lighters, or craft, under the jurisdiction of the Customhouse, or otherwise, the agent is required to ascertain whether the person in charge of such lighter or craft has demanded of the master or mate of the vessel discharging, a certificate of, or himself given a receipt expressing any apparent damage or defects in, the goods delivered over to him; and where such proves to be the case, the agent is to make a note of the same upon his survey, and procure the original, if practicable, or a copy of such certificate, to accompany the vouchers he may furnish; and he is further desired to ascertain, and notify, whether any, and what goods were laden on deck.

"The agent is further to see that the sound part of every package is separated from the damaged, and particularise the quantity of each in his certificate, taking care in the first instance to satisfy himself that the goods were properly stowed, and that the damage was occasioned by sea water whilst on board. If the agent be further called on by the consignees to superintend and certify sales, he will refer to his original survey, which specifies the quantity damaged in each package, and take care that only the damaged part or pieces be sold on account of the average. *The sale must take place within a reasonable time from the period of landing, otherwise the underwriters will be exonerated;* and in such case the agent is not to act. A certificate should always be furnished, to show what the market price or value of the goods damaged would have been at the time of sale for ready money, had they arrived without damage, taking the utmost care to guard against exaggerated and fraudulent valuations; and if part of the goods arrive in a sound state, and are sold, a certified copy of the sale of that part ought always to be furnished. When damaged goods are to be sold, they should be lotted in such quantities as are best calculated to suit purchasers in general, that the sales may be made as productive as possible.

"Should the separation of the sound goods from the

damaged not be assented to by the consignees, the agent is to notify his objection to the proceedings, and interfere no further in the sales, or in certifying the facts. A discretionary power is given to the agent, of agreeing to a compromise for damage, in cases where the claim is so small, that it would be much increased by the expense of notarial documents, advertisements, and other charges of public sale. When such compromise is made, the certificate of sound value of the goods must accompany the other papers.

"The documents required by the underwriters for the adjustment of average on goods damaged by sea-water, are as follow:

"1. *Ship's protest,* which should be compared with the log-book, and certified by the agent." But see remarks under the head *Protest.*

"2. *Survey on board* and *certificate of stowage,*" in other words, a survey upon the stowage and dunnage of the cargo on board. See *Average (Part. on goods.)*

"3. Survey on goods landed which ought to be taken as soon as possible after landing.

"4. *Custom-house certificate of return of duties,* if any.

"5. *Certificate of market price, or value of the goods* at the time of sale for ready money, if they had arrived free from damage; or certificate of the actual sale of the sound, which is always to be preferred.

"The agent is not to make up or sign any statement of average, either general or particular, as representative of the underwriters, leaving that to be adjusted between them and the assured, upon the documents which he furnishes.

"7. In the following cases, the charge for remuneration ought to be by a moderate per centage:—

"On the amount of sales when vessels are wrecked, and the agent is employed to sell vessel or goods.

"On the amount disbursed by the agent for the repairs of vessels, for assistance rendered to vessels in distress, or for salvage and charges in cases of recapture.

"But in the cases that follow, the charge is to be made not by a per centage on the value, but as a fee or reward

proportioned to the time and trouble bestowed on the business, viz. :—

"In cases where it may be requisite to unload goods for the purpose of repairing a vessel, and reshipping them on board the same, or another vessel.

"In cases where the agent only acts as surveyor of damaged goods.

"In cases where he merely examines accounts of disbursements, and certifies documents."

Note.—No direct pecuniary emolument is attached to the office of *Agent for Lloyd's.*

"8. The agent is not to be considered as the representative of the underwriters upon any particular policy, except when he is specially instructed to that effect; but as a person whose duty it is, from the nature of his appointment, to attend to the interests of the subscribers to Lloyd's in general, and protect them from fraud and imposition, in the mode of treating property in peril or under damage."

These instructions may be very serviceable for the guidance of any other individuals, not agents to Lloyd's, who happen to be called upon to act in a similar capacity.

LLOYD'S LIST is a daily publication, containing (like the *Shipping and Mercantile Gazette*) full and early information as to the arrivals and departures of ships, at and from foreign and home ports, and of casualties occurring to shipping.

LLOYD'S REGISTER of British and Foreign Shipping, which is published yearly, is an alphabetical list of vessels ranked in different classes according to their qualifications upon report of *Surveyors* specially appointed for the purpose in London, and at most of the outports of the United Kingdom. The first description of the highest class of vessels is distinguished by the letter A: the second description, comprising vessels which after a stated number of years have not undergone the necessary repairs to entitle them to be continued in, or restored to the first description, are designated by the dipthong Æ: such of the latter as are found to be of superior description have their character inserted

(in red) thus, *Æ: second class ships are designated by the letter E, and comprise all vessels which are fit for the carriage of such goods only as are not in their nature liable to sea damage: and third class ships, designated by the letter I, are those which are found to be fit for the conveyance of such goods, only on short voyages not out of Europe. Their title to be on any class is determined by certain rules laid down in the register-book as to their construction, the nature of the materials, their state of repairs, &c., and a preference both in regard to employment and insurance is given to vessels according to the characters respectively assigned to them.

"The following fees are to be charged to the owners of ships surveyed and classed:

For entering and classing of ships, and for entering and classing ships surveyed for continuation, or repaired for restoration.

For each ship	under 100 tons,	£1	0 0
„	of 100 tons, and under 200 „	2	0 0
„	200 „ „ 300 „	3	0 0
„	300 „ „ 400 „	4	0 0
„	400 and upwards, „	5	0 0

For Registering Repairs; or change of owners.

For each ship	under 150 tons,	0	10 0
„	of 150 tons, and under 300 „	1	0 0
„	300 „ „ 500 „	2	0 0
„	500 and upwards, „	3	0 0

For Re-classing ships, (except when repaired) the characters of which have been expunged.

For each ship	under 200 tons,	£0	10 0
„	200 tons, and above,	1	0 0

For Special Surveys

According to their nature, and the extent of service performed.

Certificates of the classes assigned to vessels.

For each ship	under 200 tons,	£0	5 0
„	„ 200 tons, and above,	0	10 0
The printed rules of the society, per set,		0	5 0"

LLOYD'S SURVEYORS. See *Lloyd's Register*.

LOAD-WATER-LINE. See *Water-Line*.

LOBLOLLY BOY, in a ship of war, a person who attends the surgeon and his assistants.

LOCK, *in Gunnery*, a well known instrument for striking fire. The locks used instead of match for great guns on board of ships are screwed on the vent-field and have a lanyard attached to the trigger. In the Royal Navy, these are superseded by the *detonating hammer*, which is made to descend (with the aid of a lanyard attached to it) forcibly upon a percussion cap, in order to fire the piece.

Lock *of a Wet Dock*. See *Dock*.

LOCKER. A chest or box, or a small compartment built of deal, in the cabins or store rooms of a vessel, for stowing any thing in.

Boatswain's Locker. A locker in which tools and small stuff for working upon rigging are kept.

Chain-Locker. See "Chain-Well," under the head *Chain*.

LODGING-KNEES. See *Knees*.

LOG, or Log-Book. A journal kept by the chief mate or first officer, in which the situation of the ship from time to time, the winds, weather, courses, and distances, the misconduct or desertion of any of the crew, and every thing of importance, are carefully noted down. That part of the log-book relating to transactions while the ship is in harbour is termed *the harbour-log;* and that part relating to whatever happens while the ship is at sea, is termed the *sea-log*.

The log-ship with the log-line, &c., also get the general name of the Log: thus we speak of "heaving the log." See *Log-Line*.

LOG-BOARD, or Log-Slate. A board or a slate divided into columns, in which are noted, in the first place, all the particulars that are desired to be registered: these are transferred from it to the log-book or officers' journals.

LOG-LINE. A line about 70 or 80 fathoms long, with a piece of board called the Log-Ship, or Log-Chip, attached thereto; it is wound upon a *reel*, and used to ascertain the rate at which a vessel is sailing.

The Log-Ship is in the form of a quadrant, the circumfer-

ence of it being loaded with lead, to afford the greater resistance in order to prevent its coming home when it is "hove" or thrown out from the ship's stern, and to make it sink perpendicularly in the water till the centre or angular point is just visible above the surface of the water. The log-ship has two holes in it near the corners of the circular part, and in order to present the flat surface of the board to the water while the reel is running out, the end of the line has two legs, one of which is made fast in the hole at one corner, and the other has a wooden peg attached to it which is fitted into the hole at the opposite corner in such a manner, that when the line is checked, the peg is drawn out, by which means the flat face of the board instantly ceases to oppose itself to the water, one of its angles only is presented, and it is thus hauled in with the greater facility.

As long, however, as the peg remains in its place, the plane of the board offers so much resistance to the water, that as the vessel from which it is hove advances, the log-ship remains upright nearly in the same spot, and thus draws out the line off the reel which is held up for the purpose.

Incalculating the rate of sailing, a half minute sand-glass, called the *log-glass*, is commonly used. The line is marked off by pieces of knotted cord into equal parts, each representing a nautical mile or knot, the real distance between each mark being, however, $\frac{1}{120}$th of a mile, as a half minute is $\frac{1}{120}$th of an hour. At the end of the first portion of the line, one knot is made on the cord, at the second two knots, and so on. Now, each division of the line being the same portion of a mile as a half minute is of an hour, the number of them carried off while the glass is running out, will shew the rate a vessel goes in an hour. It is found better, however, (particularly when the ship has little way), to use a glass made to run for twenty-eight seconds, which of course reduces the number of feet for a knot to forty-seven and six-tenths. "But as the line is liable to stretch and the glass to be affected by the weather; in order to avoid all danger of a vessel's overrunning her reckoning, and to be on the safe side, it is recommended," (by Mr

Dana in his *Seaman's Manual)*, "to mark forty-five feet to a knot for a twenty-eight second glass."

In order that the log-ship may get out of the eddy of the ship's wake, before the measuring begins, about ten fathoms of line (called *stray-line)* are left unmarked next the log-ship.

The end of the stray-line is marked by a white rag, and the first piece of knotted cord is 45 or 47 feet from the rag.

This mode of computing a vessel's course and distance, it may be added, is uncertain and precarious.

LOGGERHEAD. A round ball of malleable iron with a handle, having a hook at the end of it; used for heating tar, &c.

LONG-BOAT. See *Boat.*

LONGITUDE *of any place on the globe:* an arc of the equator contained between the first meridian and that meridian which passes through the place. It is usual to reckon longitude from the first meridian, whether eastwards or westwards, until we reach the opposite meridian; therefore the longitude of a place in either hemisphere can never exceed 180 degrees. THE DIFFERENCE OF LONGITUDE between two places is an arc of the equator contained between their meridians, shewing how far one of them is to the eastward or westward of the other; it can never exceed 180 degrees. See *Chronometer* and *Supplement.*

THE LONGITUDE *of a celestial body*, is an arc of the Ecliptic contained between the first point of Aries (that is, the vernal equinoctial point), and a circle of longitude passing through the centre of the body. *Circles of Longitude* are great circles passing through the poles of the Ecliptic, and so cutting it at right angles.

(Norie's Epitome.)

LONGITUDINAL SECTION. See *Section.*

LOOM *of an oar:* that part which is within the row-lock.

TO LOOM, means to appear larger than nature, as in a fog.

LOOVERED-BOARDS, or LOOVERED-BATTENS. Boards or battens framed like Venitian blinds, used for admitting air into a vessel's ports.

LUBBER'S-HOLE. A hole in a vessel's top intended for the men going up through, as an easier way than ascending by the futtock-shrouds.

LUBBER'S-POINT. See *Compass.*

LUFF. The fullest and broadest part *of a vessel's bow.* The weather part *of a fore-and-aft sail,* in other words, the side next the mast or stay to which it is attached.

LUFF. To put the helm a-lee in order to bring a vessel's head up near the wind. *To spring the luff,* is to bring her head closer to the wind: See *Keep your Luff. To luff round,* is to bring her head up to the wind in order to go about.

LUFF, or LUFF-TACKLE. A tackle composed of a single and a double block, the standing part of the rope being made fast to the strop of the single block. It is generally used for setting up rigging and for similar purposes.

Hence, LUFF UPON LUFF means one luff-tackle hooked on to the fall of another in order to afford an increased purchase.

CHOKE THE LUFF. To place the leading part or fall of a tackle into the jaw of the block, so as to prevent the tackle from rendering.

LUG SAIL. A quadrilateral or four-cornered sail, bent to a yard, the slings whereof are about one-third from its end; it is confined by means of a parrel to the mast on which it traverses up and down. Lug-sails are very powerful, but they require to be lowered down and shifted on the mast at every tack. They are used chiefly in boats belonging to the Royal Navy and Preventive service, and in fishing boats: those used by fishermen are much longer in proportion to their length than the others.

Vessels of burden carrying such sails get the name of *Luggers.*

LUMP. A name for a kind of heavy lighter used at the Royal Dockyards for carrying chain cables, tanks, or any other weighty stores to vessels, &c.

LUMPERS. A name given to labourers employed in loading and unloading vessels: more particularly applicable to such as contract to do the work by the lump.

LUNAR DISTANCE, in nautical astronomy, the distance of the moon from the sun or from a fixed star; the measurement of which is found to be of the greatest use in ascertaining longitudes. *(Squire's Grammar of Astronomy)*.

There are generally, or ought to be, four persons employed in taking the *Lunar Observations,* or (as they are briefly called) *Lunars:* "one to measure the Lunar Distance, another to take the altitude of the sun or fixed star, the third to take the altitude of the moon, and a fourth to note the time per watch and to write down the different observations; the first observer, whenever his instrument brings the two bodies into apparent contact, calls out 'stop,' in order that the observations of the others may agree in time with his."

LUNAR TABLES, are "logarithmic tables for correcting the apparent distance of the moon from the sun, or from a fixed star on account of refraction and parallax." HORARY TABLES, are "tables of logarithms intended to facilitate the computation of time deduced from the altitude of a celestial object."

Mr David Thomson's *Horary and Lunar Tables,* and those of Mrs Taylor, seem to be in most general use. The former is entituled, "Lunar and Horary Tables for new and concise methods of performing the calculations necessary for ascertaining the longitude by Lunar Observations or Chronometers, with directions for acquiring a knowledge of the fixed stars and finding the latitude by them."

MADE. See *Built.*

MAGAZINE. A close apartment built in a ship's hold for containing powder. See *Light-Room.*

MAGNETIC, or MAGNETICAL. In navigation, the magnetic amplitude, azimuth, or meridian, &c., implies the amplitude, azimuth, &c., *indicated by the compass*—the property of pointing to the North Pole being communicated to the needle by means of the magnet or loadstone. In like manner, the variation of the compass is termed the magnetical variation.

MAIN. Chief or principal: thus we say main mast,

main sail, main yard, &c., to distinguish these from the fore and mizen masts and the sails, yards, &c., which belong to them respectively: in like manner the main keel and main stem are distinguished from the false keel and false stem, and so on. See the articles *Mast, Keel, Deck, &c.*

The main-sail of a square rigged vessel is called a *square main-sail:* that of a fore-and-aft rigged vessel, from being spread by the main boom, gets the name of a *boom main-sail.*

The term MAIN is also used as a general name for the waters of the sea, the great body of the ocean.

MAKE the LAND: to come within sight of it when at sea.

MAKE SAIL. The same as to set sail.

MAKE STERN-WAY. To move astern.

MAKE WATER, denotes the act of a ship leaking.

MAKING-IRON. See *Caulk.*

MAKING-OFF. See *Flensing.*

MALL. [MAUL].

MALLET. A well known kind of wooden hammer. Caulkers use it for driving oakum into the seams of a vessel with the caulking-iron or making-iron. See *Reeming.*

SERVING-MALLET. A cylindrical piece of wood, having a groove in one side, and a handle attached: it is used in serving ropes.

MAN. *To man a vessel,* is to provide a competent number of hands for working her. *To man the Capstan,* or *the Windlass,* is to set a proper number of hands to heave at it. *To man the Yards,* is to send a sufficient number of men upon them to reef or furl the sails: this last phrase also means to range men on the top of the yards, as a mark of respect to any person, or on some memorable occasion.

MAN-HOLE. See description of *Steam-Engine,* Sect. 40.

MAN-ROPES. Ropes suspended from ornamental stanchions on each side of the gangway, to hold on by in going up or down a ship's side. See *Ladder (Accommodation)* and also *Ridge Ropes.*

MANGER-BOARD. A strong athwartship bulkhead abaft the hawse-holes in a vessel of war. Alongside of it there is a *scupper* on each side of the ship, to let off any water that may come in at the hawse-holes, and thus to keep the main deck from being flooded. The space before this board, chock forward to the bows, is called *the manger*.

MANIFEST. A document signed by the master of a vessel, containing an account of his own name, of the name and tonnage of the ship, and the name of the place to which she belongs, with a particular description of all the goods, specifying the marks of each package, the names of the places where they have been laden and for which they are destined, and of the respective shippers and consignees, &c., so far as known to the master.

This document must be made out, dated, signed by the captain, and authenticated by the collector or comptroller of the customs, or other proper officer, at the place or respective places where the cargo or the different parts of it are taken on board.

No goods are allowed to be imported into the United Kingdom in a British ship, nor tobacco in any ship, unless a manifest in which they are entered be on board. A separate one is required for tobacco.

(*Steel's Shipmaster's Assistant*).

MARINE. The Royal or the Mercantile Navy of any state. It also means *sea affairs*, or (to use the explanation of Falconer) "the whole economy of naval affairs" whether civil or military. As an adjective, it has, in some instances, the same general signification as the term *Maritime;* but more properly implies *belonging to the sea.*

MARINE-ENGINE. See *Steam-Engine* (*Marine*).

MARINE-GLUE. See *Glue* (*Marine*).

MARINES (Royal). Troops employed to serve on board of Her Majesty's ships of war. The Royal Marine Forces are under the command of a Major-General, Colonels-Commandant, &c., Colonels, Lieutenant-Colonels, Captains, Lieutenants, and other subordinate officers.

There is also an establishment of ROYAL MARINE ARTIL-

LERY under the command of a Lieutenant-Colonel, Captains, Lieutenants, &c.

MARINER. A seaman or sailor. *A master mariner*, is the same as the captain of a merchant vessel, or a ship-master.

MARINER'S COMPASS. See *Compass.*

MARITIME. Relating to the sea, or to sea affairs. Bounded by or bordering on the sea. *A maritime country* is a phrase applied not only to a country whose shores are washed by the sea, but also to any nation "which makes a figure in maritime affairs."

MARITIME INTEREST, or *Marine Interest.* See *Bottomry.*

MARL. To wind or twist a small line or rope round another; or to lace the edge or clue of a sail to a rope instead of sewing it when the rope has been served previously. *Roping* is the term for sewing the rope to the sail.

MARLINE. Small two stranded stuff, somewhat less than houseline, used like it for marling or seizing. Also, a finer kind of spunyarn.

MARLING-SPIKE. An iron pin tapering to a point; used to separate the strands of a rope in splicing or in marling.

MAROON. A name for a bright white light used for signals; common in the East Indies.

MARQUE (Letters of). See *Privateer.*

MARRY. To join two ropes together by a worming over both.

MARTINGALE, or DOLPHIN-STRIKER. A short perpendicular piece of wood or iron, generally hooked to an eye-bolt, or otherwise secured under a vessel's bowsprit; to its lower end there are attached two ropes, or small chains, which get the name of the *Martingale Back-ropes*, one leading in to each bow,—and one or more ropes or small chains, called the *Martingale-stays*, stretched to the jib-boom end, for staying down this boom. (Plates III. and IV.)

MASTS. Upright spars to which the rigging and sails of a vessel are attached.

That which is placed in the fore part of a ship, barque, or other three-masted vessel, is called the *Fore-mast;* that nearest the stern, the *Mizen-mast;* and the mast between these, the *Main-mast.* In a vessel having two masts, they are distinguished by the names of the *Fore* and *Main* masts.

The spars erected above these lower masts are, in succession, called the *Topmasts, Topgallant-masts, Royal-masts,* and the *Skysail-masts* or *Poles of the Royal-masts* (main, fore, or mizen respectively.) The sails set on these masts are termed the Topsails, Topgallant-sails, Royals, and Skysails. (Plates III. and IV.)

See the articles *Built* and *Jury-mast.*

To Mast a Vessel, means to put her masts into their respective places. See *Sheers.* It is also applied to the supplying a vessel with suitable masts, and fixing them in proper stations: this subject is ably discussed in Mr Henry Cleaver Chapman's "*Rules for the Uniform Masting and Sparring of Ships;*" and in Mr John Cock's "*Treatise on Mast-making and the Masting of Vessels.*"

MAST-CARLINGS. A name for the Partners of a mast.

MAST-COAT. See *Coat.*

MAST-PARTNERS. See *Partners.*

MAST-RIM. See *Saddle.*

MAST-ROPE, or Top-Rope. A rope used for sending a topmast or topgallant mast up and down. It is rove through a block called the *Top-block,* which is generally hooked to the lower part of the cap. See also *Heel-Rope.*

MASTER, Ship-Master, or Master-Mariner. A common name for the captain or commander of a merchant vessel.

The name of every *new* Master must be indorsed on the certificate of the ship's registry, and he has also, in terms of the Act 3d and 4th, William IV., c. 55, to give a bond similar to that which is required from the original master at the time of registry.

The master is jointly responsible along with the shipowners for all advances made, or necessaries purchased, for

the use of the ship, unless he take care, by express terms, to confine the credit to the owners only, or unless the contract have been made by the owners themselves, or under circumstances which show that credit was given to them alone.

Before proceeding to sea, the master ought to be furnished with copies of the policies of insurance effected upon his ship for each specific voyage.

When a vessel puts into a port in distress, or in any case of general and particular average, he should be careful, so far as in his power, to have the different charges which are incurred stated in the accounts quite distinct from each other: for example, those charges relating to the discharge of the cargo from those incurred while reshipping it—the fees of surveys on the ship, previously to its being determined whether the cargo must be discharged, from those of subsequent surveys—all expenses belonging to the repair of the ship, or incurred in regard to the vessel or her materials after the cargo is out, from such as concern the goods —the charges for any bottomry bond from the expense of the protest or other documents—the commission for advance of money from that charged for agency—in short (on all such occasions, whether the claim arising be one of average or of salvage loss), to see that every specific item of expense stands by itself. It would be well, also, that he use his endeavours to have the bills for repairs to the ship, especially the shipwright's account, made out in a specific form, stating the purpose to which every item applies, and also that he be careful in seeing that the surveys on the ship duly notice every part of the repair, and all furnishings required in consequence of the accident, and detail the manner in which each article was damaged or lost. By due attention to all these matters, accuracy of adjustment will be readily attained, and greater justice done both to the owners and underwriters than is likely to be arrived at by the most skilful and experienced adjuster, when the accounts and documents transmitted to him are in an imperfect, confused, and perhaps unintelligible condition. The master should further take care that the circumstances detailed in the protest be as

minute and explicit as possible ; for, owing to a deficiency of such particulars, loss may sometimes occur to the owners : the adjuster of a claim can admit only those items whereof he has proper evidence. The insurers are entitled to credit for the discount allowed *for cash*, on the bills for repairs and furnishings to the ship ; such rates of discount, therefore, ought to be noted on the various accounts, whether they were settled in cash or not.

Generally speaking, the master has no lien on the ship for his wages, or for disbursements made by him, but can only sue the owners personally in a common court of law. Neither can he interfere to prevent the owners from receiving direct payment of any part of the freight, though he may set off his wages against any claim at their instance for freight received by himself, (*Shee's edition of Tenterden*). The Merchant Seamen's Act (7th and 8th Vict., c. 112), however, provides that, in the case of the bankruptcy or insolvency of the shipowner, the rights and remedies which belong to seamen in respect to the recovery of wages shall be extended also to the master.

The duties laid on ship-masters by the Merchant Seamen's Act, will be found partly noticed under the following heads : Apprentices, Cargo-book, Coasting-trade, Consul, Crew, Customs (Collector of), Muster-roll, Passengers, Provisions, Registry of Seamen, Seaman, and Surgeon. A very useful digest of this Act, entituled the "*Shipmaster's Guide, by the Registrar of Seamen*," has been published : this contains also a full copy of the Act, along with a convenient and copious index. In rendering the lists and other returns required from shipmasters by the provisions of this Act, they ought to bear in mind that an acknowledgment for the same is to be obtained from the officer of customs or other functionary with whom they are deposited. It seems proper to add, that the general explanations given on this subject throughout the present work, are by no means presented as affording sufficient information for the guidance of masters in complying with the provisions of the Act, but only as an assistance to the memory and a

means of reference: a careful and studied examination of the Statute itself ought to be made by every shipmaster.

It is important to direct attention to the following works, wherein the duties, powers, and responsibilities of shipmasters are ably and fully discussed: *Lord Tenterden's Treatise of the Law relative to Merchant Ships and Seamen, (Shee's edition); Holt's Shipping and Navigation Laws; Steel's Shipmaster's Assistant; Symons's Law relating to Merchant Seamen,* and *Lorimer's Letters to a Young Master Mariner.* To the first mentioned treatise there are appended forms of various documents, such as the Bonds given by the master and owners of a British ship at the time of Registry, and on a change of master—Bills of Sale and Mortgages of Ships—Certificate of Registry—Bottomry Bond—Protests of different kinds—Average-agreement, and so on.

Master *of a Ship of War.* An officer whose peculiar duty it is (under the controul of the captain) to take the immediate charge of navigating the ship. See *Mate.*

MASTIC. A particular kind of cement, now used in shipbuilding, instead of putty, as a protection for the heads of bolts.

MAT, or Matting, made of strands of old rope or of spunyarn beaten flat and interwoven, is used to prevent chafing—such as the *Rigging-mats,* which are for this purpose seized upon a vessel's rigging. *A Paunch-mat,* is a thick mat placed at the slings of a yard or elsewhere. *Sword-mats,* are mats woven by means of a piece of wood resembling a sword. See *Thrum.*

MATCH, for firing guns, is made of a kind of tow twisted up in two lays, and prepared with saltpetre and other inflammable ingredients: it is now used in vessels of war only when the *gun-locks* happen to get out of order. See *Lock.*

To prime match, is to put a little wet bruised powder, made into a sort of paste, upon the end of it, with a piece of paper wrapped round; the object of this is to make the match ignite more easily.

Match-Tubs. Tubs widening towards the bottom, and

having a cover perforated with holes to admit the lighted match inverted. Water is kept in them to extinguish any sparks that fall from the match. These are much safer and more convenient than the linstock, a staff which was formerly used to be stuck upright in the deck for holding a lighted match in time of action.

MATE, or CHIEF MATE *of a merchant vessel:* the officer next to the master, and who, in the absence of the latter, acts as his deputy. In a coasting vessel there is seldom more than one mate: in other merchantmen there may be two or more, according to the size of the ship, denominated first, second, third, and fourth mates, &c.

In ships of war, the *Master,* whose peculiar duty is to take charge of navigating the vessel, has in like manner *mates* under him, consisting of such midshipmen as have passed the necessary examination qualifying them for appointment as lieutenants: and the *Boatswain, Gunner, Carpenter, &c.* have each his "mate" or assistant.

MAUL or MALL. A large iron hammer used for various purposes. The mauls employed for driving bolts or treenails, have a steel face at one end, and a point or pin drawn out at the other; they are hence called *Pin-mauls.* There are also wooden mauls called "beetles," hooped with iron, used for driving treenails.

Double-headed mauls, have a steel face at each end, of one size; they are used for driving large bolts, &c.

A top-maul, is a maul kept in a vessel's top for driving out and in the fid.

MEAN TIME, is that which is "shewn by good time-keepers properly regulated, which are conceived to have a uniform and regular motion." *Apparent time,* is that which is ascertained by observations of the sun, or which is indicated by a sun-dial.

Owing to the unequal motion of the earth on its orbit, combined with the inclination of its axis to the plane of the ecliptic, the time of the sun's return to the meridian varies at different periods of the year, sometimes occurring sooner, sometimes later than at the hour of twelve, as indicated by an

accurate watch. This acceleration or retardation, which sometimes amounts to more than sixteen minutes, is called the *Equation of Time;* it is set down in the *Nautical Almanack* in order to afford the ready means of reducing apparent to mean time, or mean to apparent time, for the purpose of ascertaining the errors of watches.

(Norie's Epitome of Navigation and Nautical Astronomy).

MEDICINES. See the article *Provisions.*

MERCHANTMAN. A name for a merchant vessel; that is, a vessel employed in carrying goods to or from any quarter.

MERCURIAL GAUGE. See description of *Steam-Engine,* Sect. 42.

MERIDIANS. Imaginary circles on the earth, passing through both poles, cutting the equator at right angles, and dividing the globe into equal parts, the eastern and western hemispheres; or rather, the meridian of a place is a semicircle passing through it and terminating at the North and South Pole; the remaining semicircle being called the *opposite meridian.* Every place on the surface of the earth has its own meridian, and to it the sun is vertical at noon.

A meridian passing through some remarkable place is fixed upon by geographers as the *first meridian.* Thus, the British reckon that the first meridian passes through the Royal Observatory at Greenwich—the French, that it passes through the Royal Observatory at Paris—and so on.

The meridian of a place on the celestial sphere, is its terrestrial meridian extended to the heavens; in other words, that vertical circle which passes through the poles, crosses the equinoctial at right angles, and intersects the horizon at the north and south points, dividing the heavens into two hemispheres, the eastern and western.

Twenty-four of these celestial meridians, or (as they are termed) *circles of right ascension,* dividing the equinoctial into parts of fifteen degrees each, are called *hour-circles.*

(Norie's Epitome of Navigation and Nautical Astronomy).

MESS. Any number of men belonging to a vessel who eat or lodge together : they are hence called *mess-mates*, and are said to *mess* with each other.

MESS-DECK. The deck on which a ship's crew mess.

MESS-KID. A kind of wooden bowl or platter for holding the men's victuals in when cooked.

MESSENGER. A rope or chain used for heaving in the cable of a vessel that weighs her anchor by a capstan : three turns of it are taken round the capstan, and it has an eye spliced at each end with a lashing to connect them. It is made fast to the cable by means of nippers; or, if of chain, it hooks on to the cable.

Instead of the above, a superior plan is now adopted, the messenger, consisting of a pitch chain (which has a double and single link alternately) working in iron spurs fastened to the bottom of the capstan : this avoids the trouble of shifting, or, as it is called, *fleeting* the messenger while heaving.

META-CENTRE, sometimes called *the Shifting Centre*, in shipbuilding, that point below which the centre of gravity of the ship (that is to say, the point about which all the parts of the ship balance each other) must necessarily be placed in order that, when heeled over, she may be capable of recovering her upright position. See *Creuze's Treatise on Naval Architecture*, page 33.

MIDDLE-LINE. See the article *Shipbuilding* and also Plate II. fig. 6.

MIDDLE-WATCH. See *Watch*.

MIDSHIPS. The same as amidships.

MIDSHIP-FRAME, or *Dead-flat*. The frame which forms the extreme breadth of a vessel.

MIDSHIPMEN, in a ship of war, junior or petty officers under the lieutenants : " they pass the word of command on board, attend parties of men sent on shore, &c., and in small vessels some of the older ones are entrusted with the watch ; in short, they are exercised in the various duties of their profession with the view of being, after six years' service, qualified to become lieutenants." As soon as a midshipman has

passed the necessary examination so qualifying him, he becomes a *Master's Mate.*

MISS STAYS. See *Stay.*

MITRED. Two pieces of wood are said to be *mitred,* when their ends are connected together so that the joint forms an angle, more especially when the pieces are perpendicular to each other, and the angle formed by the joint is 45°.

MIZEN. A term used to distinguish the aftermost mast in any vessel which has three masts, and all the sails, spars, and rigging connected therewith. See *Mast.*

The spanker, in a ship or barque, sometimes gets the name of the *Mizen.*

MODEL. See *Shipbuilding.*

MONKEY. A machine composed of a long pig of iron traversing in a groove; it is raised by a pulley and let fall on the head of large bolts, for driving them in when the weight of mauls would be insufficient. When used for deadwood bolts, or for the bolts in the cutwater, it has generally a frame with handles, with a groove on the under side, and slides upon a ridge of iron fixed in a bed, being drawn backwards and forcibly forwards by a rope on each side. (*Shipwright's Vade Mecum*).

MOORING. The most common way of mooring a vessel in a river or tideway, is by putting two anchors out ahead of her, connected by a chain; to the middle of this chain there is made fast a shackle or ring, having a swivel attached, to which the ship's cable is bent, and she has thereby freedom to swing round with the turn of the wind or tide without fouling her anchors. A vessel with only a single anchor out is said to be *moored,* when there is a kedge run out abreast of it, the warp of which is hauled well taut so as to draw the ship's head a little towards the kedge, when required, to prevent the cable from getting foul of it.

When the ship has one anchor out from her bow, and another from her stern, with springs attached to each for steadying her, she is said to be *moored head and stern.*

The term *mooring* also implies the act of securing a ship or boat alongside of any landing place.

MORTAR. A kind of short gun with a very large bore, used on board of bomb-vessels, &c., for throwing shells. The inner end of its bore is of smaller diameter, forming what is called a *chamber* for the powder.

MORTGAGE *of a vessel.* A transfer of the whole or of any part of the interest or right of property in the ship, made by the owner thereof to another party in security of money advanced by the latter, with a condition of retransfer on payment of the debt. The party who grants the mortgage, is termed the *mortager;* the party obtaining such security, the *mortgagee.*

No mortgage of a ship is valid unless the requisites prescribed by the registry acts are observed. (*Statute* 3 *&* 4, *Will. IV., c.* 55.)

On this subject reference may be made to *Holt's Shipping and Navigation Laws,* and to *Tenterden's Treatise of the Law relating to Merchant Ships and Seamen.*

MORTICE, or MORTICE-HOLE. A recess or notch made in one piece of timber to receive a tenon made on the end of another piece. See also *Dove-tail,* and description of *Block.*

MORTISE. [MORTICE].

MOULDS, in shipbuilding, thin pieces of deal or board formed to the shape of the timbers: they are prepared in an apartment called the MOULDING-LOFT, on the floor of which the draughts of the ship are laid down. *Moulds for drawing plans of vessels,* are thin pieces of wood of different forms, such as parts of circles, ellipses, and other figures.

See *Ram-Line.*

MOULDING-DIMENSION. See *Siding-Dimension.*

THE MOULDING EDGE of a timber, is that edge to which, in shaping it, the mould is applied.

MOURNING. In this country, vessels are painted blue as a mark of mourning. When a square-rigged vessel appears in mourning in a harbour, the yards are topped alternately in opposite directions.

MOUSE, or MOUSING. A kind of ball or puddening made of yarns, sometimes wrought on the collars of stays.

To Mouse, is to put turns of rope-yarn or spun-yarn round

the point of a hook and its standing part, when hooked to anything, in order to prevent its slipping out.

MUFFLE. Oars are *muffled*, by putting mats or canvass round their looms in the row-locks.

MUNIONS, or MUNTINS. Pieces of carved work placed between the lights in a vessel's stern and quarter galleries.

MUSTER-ROLL. A document which is required by the act 4 and 5 Will. IV., c. 52, to be kept by the master of every vessel belonging to any British subject, specifying his own name and the names of the whole ship's company, the place of each person's birth, the place and time of his entry to the ship, the place and time of his discharge from or leaving the same, and other particulars according to a form prescribed by that act. A duplicate of it, signed by the partyin charge of the vessel, is to be delivered (if required) to the receivers of the Merchant Seamen's Fund at the place where the ship may be reported or discharged. *(Steel's Shipmaster's Assistant).*

By statute 7 and 8 Vict., c. 112, § 55 and 56, production of the *muster-roll*, log-book, agreement or agreements with the ship's crew, their register-tickets, the indentures and assignments of apprenticeship, and a list of all the passengers and persons on board, must be made by the master (when required) to any commissioned officer in the Royal Navy, to the British consuls and vice-consuls at foreign ports, to the registrar of seamen and his assistant in London, and to the chief officers of customs of any other port at home or abroad: any of whom also are empowered *to muster the crew* (including apprentices) in order to see that the provisions of the statutes relating to seamen, or the laws relating to navigation, have been duly complied with.

MUZZLE *of a gun:* the mouth, or outer end of its bore.

NADIR. See *Zenith.*

NAILS. Of the various descriptions of nails used for shipbuilding purposes, we may notice the following:

CLAMP-NAILS, are short stout nails with large heads for fastening iron clamps or plates.

COMPOSITION-NAILS, which are made of a mixed metal

known by the name of *Composition*, are used for various purposes; particularly for nailing on copper-sheathing, whence they often incorrectly get the name of *copper-nails*. They are also sometimes made of a large size to be used for decks, or for the butt-ends of small vessels; for which latter purpose, however, bolts are preferable. Those used for wood-sheathing are of an intermediate size.

Copper-Nails, are chiefly used in boatbuilding, and for nailing in any splinters that may occur in a vessel's bottom-plank during the process of building; also, for nailing up the binnacle, for which purpose they are preferable to iron nails, because they have no effect on the magnetic needle, and so on. See *Composition Nails.*

Flat-Nails, are small sharp-pointed nails, with flat thin heads, for nailing the scarphs of moulds, &c.

Ribband-Nails, have large round heads, so that they may be the more easily drawn, &c.; they are used chiefly for fastening ribbands, or for nailing any cleat which requires to be taken off again.

Rudder-Nails, are similar to clamp nails, but used mostly for fastening the pintles and braces of the rudder, which, however, are now more commonly fastened by copper or iron bolts: the most of these bolts should go right through and be clinched.

Scupper-Nails, are short nails with very broad flat heads; they are used for nailing down pieces of leather under the scuppers to carry off water while washing the decks, for nailing down tarpaulings, and for other purposes.

Spike-Nails, or Spikes. A name for nails of four inches and upwards in length. Deck Nails are a kind of spike, with larger heads, commonly made in a diamond form. Spikes are used for ceiling &c. In some parts of the Continent of Europe, they are frequently made use of also for fastening the bottom planks of vessels, although, if iron be employed for this purpose, bolts (whereof the greater part ought to go through and be clinched inside) are greatly preferable. See *Composition-nails*, above.

NARROWS. Any contracted fairway; more particu-

larly any narrow part of a navigable river where the stream is more rapid than at other parts.

NAUTICAL. Pertaining to ships or sailors, or relating to maritime affairs.

NAUTICAL ALMANACK and ASTRONOMICAL EPHEMERIS. An annual publication which, for the convenience of navigators going distant voyages, is issued several years in advance, containing accounts of astronomical phenomena, with the successive changes which take place in the course of the year, including the declination, right ascension, latitude, and distances, &c., of all the heavenly bodies, to assist the mariner in obtaining by observation his latitude and longitude at sea.

NAUTICAL MILE. See *Knot.*

NAVAL. Relating to ships. Consisting of ships. In a less extensive and now more commonly adopted sense, it implies belonging, or relating to the Royal Navy. "*The Naval Service, or Officer's Manual,*" *by Captain W. N. Glascock, R.N.,* is a work which embraces the various subjects connected with the duties of naval officers, including also practical seamanship and various other information in regard to nautical affairs.

NAVAL ARCHITECTURE. The art or science of shipbuilding.

NAVAL TACTICS. The warlike operations of fleets; or rather the art of arranging and conducting such operations.

NAVIGABLE. Capable of being passed by ships or boats, more especially by vessels of burden.

NAVIGATE. To sail; to conduct the movements of a vessel at sea.

NAVIGATION. The act of navigating vessels. That branch of a seaman's art which consists in ascertaining a ship's place on the globe, and shaping the courses to be steered. For explanations on this subject we have throughout the present work been mainly indebted to Mr J. W. Norie's *Epitome of Navigation and Nautical Astronomy,* which has been long and still continues a standard work. We have also taken occasional advantage of a very scientific work of

recent date, entituled, *Raper's Practice of Navigation and Nautical Astronomy,* as well as of *Mrs Taylor's Epitome;* both of which, along with *Riddle's Treatise on these branches of Nautical Science,* are deserving of special notice. See *Sailing.*

NAVIGATION LAWS. A term applied to those statutes, the object whereof is to promote the increase of native shipping, by securing a demand and employment for it. *Holt's Shipping and Navigation Laws* is a work of high authority. An abstract of the existing Navigation Laws may be seen in *M'Culloch's Dictionary,* or *Waterston's Cyclopædia of Commerce.*

NAVIGATOR. A person skilled in the art of navigating vessels. A seaman.

NAVY. A fleet. Also a general term for the ships belonging to any country, whether employed for the purposes of commerce or of war.

The most special application of this term, however, is to signify the ships of war in the service of the government of any nation. The classes, denominations, and complements of Her Majesty's Ships, that is to say, of the Royal Navy of Great Britain and Ireland, are as follows:

FIRST RATED SHIPS.

1st RATE	All of three decks.....	110 Guns and upwards.	950 Men and upwards.
2d RATE	One of her Majesty's yachts, and all two-decked ships of.....	80 ..	750 ..
3d RATE	Her Majesty's other yachts, including such vessels as bear the flag or pendant of an admiral or a captain superintending a dock-yard, and all ships of....	Not less than 70.... And under 80 guns	Not less than 620 .. And under 750 men.
4th RATE	Ships of.....	50.... 70 „	450 .. 620 „
5th RATE	Ships of.....	30.... 50 „	300 .. 450 „
6th RATE	All other ships bearing a captain.		

SECOND RATED SHIPS.

Sloops of war which comprise bomb-ships, and all other vessels commanded by commanders.

THIRD RATED SHIPS.

All other small vessels, such as are commanded by lieutenants, and having complements of not less than sixty men.

Smaller vessels not classed as above to have such smaller complements as the Lords Commissioners of the Admiralty may from time to time direct.

These particulars are extracted from *List of Royal Navy in the Royal Kalendar,* and *Haultain's New Navy List,* 1845.

NEAP-TIDES. See *Tide.*

NEAPED. A vessel is said to be *neaped,* when she is left so far aground that she will not float at high water until the spring-tides make.

NEAR. A term used, with reference to the steering of a vessel, to imply close to the wind. Hence, the order to the helmsman *no nearer!* (or *no higher!*), means not to let the ship's head come closer to the wind. *Off* is the opposite term; so, *nothing off!* is an order not to let her fall off from the wind.

NEEDLE (Magnetic). See descriptions of the *Compass* and *Dipping-Needle,* and also the article *Magnetic.*

NESS. A term compounded with some proper name to distinguish a low point of land: as, *Dungeness, Buchanness, &c.*

NETTING. Net-work of small rope, cord, or sinnet. Nettings are used about several parts of vessels; we may notice the following:

BOARDING-NETTINGS. A frame of stout nettings put round a ship to prevent her being boarded.

BOWSPRIT-NETTING, or *Staysail-Netting.* The netting above a vessel's bowsprit, for stowing away the fore-topmast staysail. See *Ridge-rope.*

BULWARK-NETTING. An ornamental frame of netting answering the purpose of a bulwark. This is seldom used but for *poop-bulwarks.*

HAMMOCK-NETTINGS. Frames of netting (or boards), supported by rails and stanchions erected upon a vessel's bulwarks, for stowing the seamen's hammocks in. They are

termed *waist, poop, quarter-deck,* or *forecastle* nettings according to their place in the ship.

HATCHWAY-NETTINGS, are nettings sometimes placed instead of gratings, over the hatchways, for security, and to allow at the same time a free circulation of air below. Some of them are made with an opening to let a windsail go through.

HEAD-NETTINGS. See *Head-rails.*

NETTLES. The same as *Knittles.*

NEUTRAL SHIP. A vessel which in time of war does not take part with any of the contending powers. It requires to be furnished with a *passport* and other documents, to permit of its proceeding on the voyage intended; and when summoned by a ship of war, it must bring-to, and submit to be searched. [*Marshall on Insurance—Park on Insurance (Hildyard's edition).*]

NIPPERS. A number of yarns marled together, used to secure the cable to the messenger in heaving up an anchor. The operation is termed NIPPERING THE CABLE, and the men employed to put them on and take them off are called *nipper-men.* But see the article *Messenger.*

NIPPERING, also means fastening two parts of a rope together in order to prevent it from rendering; this is often required to be done in setting up rigging.

NO HIGHER! or NO NEARER! See *Near.*

NORTHING. The distance sailed northwards. In like manner we speak of *southing, easting,* and *westing.*

"Northing and southing are measured in degrees of longitude on a meridian; easting and westing in degrees of latitude upon the Equator."

NOSLES (or STEAM-PORTS) and NOSLE-FACES. See description of *Steam-Engine,* Sect. 2.

NOTARY, or NOTARY-PUBLIC. A person legally empowered to attest deeds or writings in order to give them the stamp of authenticity. A notary is employed, among other things, to note and to extend protests—that is, to enter a note of the particulars relating to the protest in a book (called a protocol book) kept by him for such purposes, and

afterwards to write it out fully and execute the document in form upon stamped paper. British consuls and vice-consuls are empowered to act as notaries. When neither a notary nor a consul is on the spot, a justice of the peace may be employed in their stead; and in the absence of all these it would seem advisable generally to have the matter in question adjusted and arranged before two respectable merchants. See *Protest.*

NOTHING OFF! See *Near.*

NUN-BUOY. See *Buoy.*

NUT. A small piece of iron with a screw hole cut through the middle of it; used for screwing on to the end of a bolt instead of clinching the bolt, and for similar purposes.

OAKUM. Old rope untwisted and loosened out to the original texture of hemp, in order to be used in caulking.

OAR. A long piece of timber formed with a flat blade at one end; used for propelling boats, or small vessels of burden. The foremost oar is termed the *Bow-oar;* and the aftermost, the *Stroke-oar.*

The men who pull the oars are called either *Oarsmen* or *Rowers:* he that pulls the bow-oar is also called *the Bowman;* and he that pulls the stroke-oar, *the Strokesman.*

To feather an oar, in rowing, is to turn the blade horizontally when lifted out of the water, so that its upper edge may point aft: this is done in order to lessen the resistance of the air upon it.

See the articles *Double-bank*, *Loom, Row,* and *Scull.*

OBLIQUE ASCENSION. See *Ascension.*

OBLIQUITY OF ECLIPTIC. See *Ecliptic.*

OBSERVATION, in nautical astronomy, denotes the act of observing with an instrument the altitude or relative position of any of the heavenly bodies, in order to estimate the latitude or longitude; which calculation is termed "working an observation."

OCEAN. A vast collection of salt water separating continents from each other; as the Atlantic and Pacific Oceans.

A smaller collection of the waters of the sea, confined by land within a narrower space, gets the name of *a Sea;* as, the Mediterranean and Baltic Seas.

OCCULTATION. The obscuration of a fixed star or of a planet by the interposition of the moon. (*Squire's Grammar of Astronomy.*)

OFF. See *Near.*

OFF AND ON. *To stand off and on,* implies to stand alternately on different tacks from and towards the shore.

OFFICER. This term is, both in the royal and mercantile navies, applied to any one of a ship's company who ranks above the common sailors.

OFFICER OF THE WATCH. The lieutenant, mate, or other officer who has the charge of a particular watch.

OFFING. A situation at some distance from the shore; it is generally understood to imply beyond anchor-ground.

To keep a good offing, means to keep well off from the land while under sail.

ON THE BEAM, ON THE BOW, and ON THE QUARTER. See *Bearing.*

OPEN. *An open roadstead,* means one which is not sheltered from the wind and sea. See also *Hawse.*

OPPOSITION. See *Conjunction.*

ORDINARY. The establishment of such vessels of war as are out of commission, and laid up in harbour at the Royal Dockyards. See also the article *Seaman.*

ORLOP-DECK. The lowest deck in a ship of war, or in any merchant vessel, which has three decks.

OUT OF WINDING. See *Winding.*

OUT-BOARD, in shipbuilding, signifies on the outside of the ship: *in-board* is the reverse term. Thus we speak of the *out-board* and *in-board works,* &c.

OUTFIT. The tackle, furniture, and provisions and other stores, with which a vessel is fitted out for any voyage. A policy of insurance on the ship is generally understood to cover her outfit, *and a separate insurance on outfit never should be made;* but if an insurance of this latter description *be* effected, confusion and uncertainty can, to a certain ex-

tent, be avoided by expressly specifying the articles to be insured as outfit, or by warranting the policy thereon to be "free from particular average, and without benefit of salvage;" at the same time, the effect of the statute 19th Geo. II., c. 37 on such a warranty may deserve consideration.

It is well here to notice that, where a ship has been insured to the extent of the value stated in the policy, and it is afterwards thought proper to insure a further sum upon her, in order to cover the real worth of the ship, the value in every policy should then be entered at the full amount insured.

Advances of wages made to seamen before proceeding on a voyage, are often included in the insured value of the ship as part of her outfit.

See the article *Provisions.*

OUT-HAUL, or OUT-HAULER. A rope used for hauling out the clue of a boom-sail. A rope used for hauling it in, is called an *In-hauler.*

OUT-PORTS. A general name for all ports in the United Kingdom out of London.

OUT-RIGGER. A spar rigged out from a vessel's top or crosstrees, to spread the top-gallant breast-backstays.

Any boom rigged out from a vessel, to hang boats by, clear of the ship, when at anchor, or for other purposes. See *Guess-Warp Boom.*

Also, a strong beam of wood stretched across a vessel, projecting from and lashed to bolts on each side of the ship, tackles or guys connecting the end of it with a mast-head in order to secure the mast while the ship is hove down.

OUTWARDS. A vessel is said to be entered *outwards*, or *inwards*, according as she is entered at the Customhouse to depart for, or as having arrived from, foreign parts.

The pilotage or other charges incurred in entering any port are termed *inward* charges; and those incurred in departing from it, *outward* charges.

See the article *Bound.*

OVERBOARD. Off or out of a vessel: applied to any person or thing falling or thrown out of the ship.

OVERHAUL. To overhaul *a ship*, or her *rigging*, &c., means to examine or inspect its condition. When we say that a vessel has got *a thorough overhaul*, this implies not only that she has been properly inspected, but that any defect has been made good.

To overhaul a ship, is a phrase also used to signify coming up with or gaining ground upon her. And in another sense, it implies to examine a vessel in search of contraband goods.

To overhaul a tackle, is to let go the fall and pull on the leading parts, so as to separate the blocks.

To overhaul a rope, means to clear or disentangle it; or to pull a part of it through a block, so as to make it slack.

If a cable slip round the windlass when a vessel is at anchor, *the cable is said to overhaul.*

OVERLAUNCH, in shipbuilding, to run the butts or scarphs of planks or pieces of timber to a certain distance beyond the butts or scarphs next above or beneath them, in order to make strong work. See *Shifting.*

OVERMASTED, expresses that a vessel's masts are too long and heavy.

OVERRAKE. Heavy seas breaking over a vessel, when she is at anchor, head to the sea, are said *to overrake her.*

PACKET, or Packet-Ship. A term originally applied to any ship employed by Government to carry the mails to and from places abroad. It is now also applied to any ship, whether a sailing vessel or steamer, trading regularly between two places with goods and passengers.

PAD-PIECE, or Pad, in shipbuilding, a piece of timber placed on the top of a beam at its middle part, in order to make up the round of the deck. Pad-pieces are used more especially for paddle-beams. Fillings on the timbers also get the name of Pads.

PADDLE. A kind of short oar with a very broad blade; chiefly used for canoes.

PADDLE-BEAMS.
PADDLE-BOX.
PADDLE-SHAFT. } See *Paddle-wheels.*

PADDLE-WHEELS, or PADDLES. The wheels, one on each side of a steam-vessel, which are driven by means of machinery in order to impel her. The 'thwart boards forming the circumference of the paddle-wheel are termed *floats*.

The upper half of the wheel is encircled by a frame of wood called the *Paddle-box*. Mr Smith's *Paddle-box Boat* is a boat made to fit (with its bottom upwards) the top of the paddle-box rim, thus forming a covering or top to the paddle-box, while it can be conveniently turned up and put into immediate use on any emergency.

The Paddle-beams are two beams of large dimensions, projecting over the sides of the ship; between these the paddle-wheels revolve: at their extreme ends on each side of the vessel there is a fore-and-aft beam, called a *Spring-beam*, connecting them together, and used to support the outer end of the *Paddle-shaft*, that is, the iron axis whereon the paddle-wheels revolve. The paddle-beams are secured inside the ship by wooden and iron knees, and outside by iron knees: the latter have near the extremity of each tail, a "joggle" or notch to act as a stop to an iron bar, called a *stay*, which is extended between the two tails of the knee as an additional support to the projecting ends of the beam.

See the article *Screw-propeller*, and description of the *Steam-Engine*, Sect. 35.

PAINTER. A rope used for securing a boat. See *Shank-painter*.

PAINT-STRAKE, or SHEER-STRAKE. See *Strake*.

PALM. A piece of leather made to fit over the hand, with an iron for the head of a needle to press against in sewing upon canvass. Also, the fluke of an *Anchor*.

PARALLAX. The angular depression of a celestial body caused by its being seen from the surface instead of from the centre of the earth. *(Raper)*.

"In deducing our conclusions," (says Mr Norie) "from observations made upon the fixed stars which are at such an immense distance from the earth, the sensible and rational horizons may be considered as coinciding, and this will lead to no material error; but with respect to the sun, moon, and

planets, the earth's semidiameter must be taken into account.

"The Parallax of any object is measured by an arc of a vertical circle intercepted between a line extended from the centre of the earth, and a line extended from the eye of the observer, through the centre of the object. If the object be in the sensible horison, this arc is called its *horizontal parallax;* if above the horizon, its *parallax in altitude.*

"It is evident that the altitude of an object seen from the earth's surface is less than it would be if seen from the centre: hence the parallax is to be added to the apparent altitude in order to obtain the true altitude.

"The nearer an object is to the earth, the greater is its parallax: the parallax, also, of any object is greatest at the horizon, and diminishes proportionally as it rises above the horizon till at the zenith where the parallax vanishes."

(*Norie's Epitome*).

PARALLEL OF LATITUDE. See *Latitude.*

PARALLEL-BAR, and PARALLEL MOTION SHAFT. See description of *Steam-Engine*, Sect. 21.

PARBUCKLE. A contrivance for shipping or discharging casks, by making fast the bight of a rope on board the ship, and passing the hauling parts of it round the quarters of the cask, so that the cask may be rolled up and down at pleasure; this is used also for bale goods, spars, &c., when the distance from the shore is too great for a crane or tackle conveniently to bear upon them. The operation is termed *parbuckling.*

PARCEL. To wind strips of tarred canvass (which in such cases gets the name of *parcelling*) round a rope previously to its being served, in order to secure it from being injured by water lodging between the parts of the service when worn.

PARREL. A rope or iron collar by which a yard is confined at its slings to a mast. Iron parrels are now commonly used.

The *lower* yards are generally confined to the masts by means of trusses.

TRUSS-PARREL. See *Truss.*

PART. A vessel is said to *part from an anchor,* when she is driven from it in consequence of the cable breaking. When such a mishap occurs merely by her riding hard, the loss of anchors and of cables (whether rope or chain) is not recoverable from underwriters.

PARTICULAR AVERAGE or PARTIAL LOSS. See *Average (Particular).*

PARTNERS. Pieces of timber let in between two of the beams to form a framing for the support of anything which passes through a vessel's deck : as of the masts, capstan, pumps, or pawl-bitt. In large ships the *bowsprit* generally steps on a frame-work called the *Bowsprit-partners,* bitts being let down, one on each side, termed the *Bowsprit-bitts,* which in some ships are used for belaying the topsail sheets to. The bowsprit of any small merchant vessel is commonly bolted to one of the deck beams.

PASSAGE MONEY. The charge made for the conveyance of a passenger or of passengers in a merchant vessel. In regard to the insurance of passage money, some remarks are offered under the head *Provisions.*

PASSENGERS. The carriage of passengers in merchant vessels is placed under certain regulations by the statute 5th and 6th Vict. c. 107 ; an abstract whereof may be seen in *Clement's Customs Guide.* This act not only regulates the number of persons allowed to be carried in proportion to the tonnage of the vessel (which may not exceed three persons to every five tons of her burden, master and crew included), and in proportion to the clear space occupied by the passengers, but also requires that the ship should have lower hold beams, and determines the heights of the decks and accommodation of the berths. It is, among other things, laid down that " there shall be issued to each passenger daily throughout the voyage, a supply of fresh water of at least three quarts ; and, not less than twice a week, a supply of provisions after the rate per week of seven pounds of bread, biscuit, flour, oatmeal, or rice, half of which may be supplied in potatoes, computing five pounds thereof as equal to one

pound of the other articles: and such water shall be kept in tanks or sweet casks, and such casks shall not exceed three hundred gallons; and no spirits or strong waters shall be sold to the passengers during the voyage." A list of passengers must be made out in duplicate, one of which to be kept by the master is signed by the collector of customs, and other forms have to be attended to. This act does not apply to places under the government of the East India Company.

See the articles *Surgeon* and *Provisions*.

PASSPORT, in maritime affairs, a written permission granted by a ruling power to navigate a certain portion of the seas, or by a neutral state, in time of war, for a vessel to prosecute a certain voyage, without molestation.

PATENT GLASSES. See *Bull's Eye*.

PATENT METAL. A name given to the *yellow-metal* patented by Mr Muntz, used for the sheathing of vessels. See *Copper*.

PAWLS (Pauls, or Palls) *of a capstan*, are short pieces of metal traversing on bolts fixed to the body of the lower part of the capstan, and falling into the notches of a cast iron ring let into the ship's deck: *the pawls of a windlass*, in like manner, turn upon bolts going through a plate which is fixed upon the pawl-bitt, and they fall into the notches of a metal collar fitted round the middle of the windlass: *the pawls of a winch*, traverse in the same way upon the winch-bitts. Their use is to prevent a recoil of these machines respectively, during the process of heaving. In the old form of the capstan, the pawls traverse on bolts fixed in the deck, and are made to fall in to the sides of the whelps, when required, in order to prevent its recoil.

Pawl-Bitt. See *Bitts*.

PAY. To lay on a coat of tar or some other substance with a mop or brush, in order to preserve the surface of any thing. The seams of a vessel, after being caulked, are paid with pitch, resin, or marine glue, to keep water from the oakum, &c.

PAY AWAY. The same as *Pay-out*.

PAY OFF, in seamanship, means to let a vessel's head fall off from the wind.

PAY OUT *a cable* or *rope:* to slacken it and shove it, or let it run out at a hawse-hole or elsewhere. *To veer away the cable,* has the same meaning.

PEA *of an anchor.* See description of *Anchor.*

PEAK. The upper outer end of a gaff.

To peak a yard or gaff, is to lay or raise it apeak. See the article *Apeak.*

See also *Fore-Peak.*

PEAK-DOWNHAULER. See *Down-haul.*

PEAK-PURCHASE. A tackle on the peak-tye for hoisting it.

PEAK-TYE. A tye used in some ships for hoisting the peak of a heavy gaff.

PENDANT, or PENNANT. A long narrow piece of buntine carried at the mast head of a ship of war. *A broad-pendant,* is a swallow-tailed piece carried in the same way in a commodore's vessel.

Pendant is also the name for a strop of rope fitted at one end to a mast-head or elsewhere, with a hook, thimble, or block at the other end, for a brace to reeve through or to attach a tackle to: for this purpose, a short end of one of the shrouds on either side is often used. *A boom-brace-pendant,* is a rope attached to the extremity of a studding-sail, and leading down on deck; it is used for counteracting the pressure of the sail upon the boom. See *Reef-Pendant* and *Rudder-Pendant.*

PENINSULA. A piece of land almost surrounded by the sea, joined to the main land only by an "isthmus" or narrow neck.

PENNANT. [PENDANT].

PERIGEE. See *Apogee.*

PERIHELION. See *Aphelion.*

PETTY AVERAGE. See definition of *Average.*

PHASES, in astronomy, the varying appearances of the enlightened parts of the moon and of the planets Venus and Mercury. *(Squire's Grammar of Astronomy).*

PIER. A sort of quay, or a jetty, projecting into the water, serving as a landing place, and at which vessels may be discharged and loaded.

PILASTERS, in shipbuilding, flat columns placed as ornaments on the stern and quarter galleries, or in the cabins &c.

PILLARS, or STANCHIONS. Square or turned pieces of timber erected perpendicularly under the beams of a vessel for their support. Pillars are sometimes made of iron. See *Stanchions.*

PILOT. A person whose business is to conduct vessels from or into roads, rivers, or harbours, over bars or shoals, or through intricate and dangerous channels. He ought to have a proper knowledge of the bearings of the sands, rocks, or other dangerous objects which obstruct the navigation, of the soundings at all times of the tide, of the marks or lights along the coast; in short, to possess every information which will enable him "*to pilot*" vessels in safety.

In some places it is obligatory on the master of a vessel to take a pilot on board, and in such case all practicable means consistent with the safety of the ship must be used to obtain one. In other places it is not compulsory on the master to employ a pilot; but if he trust to his own skill and judgment without taking a pilot on board, and any accident happen, it is the practice of English underwriters to refuse payment of the loss: (*Mr Sharp's "Letter to the Viscount Sandon, M.P., on the establishment of Navigation Institutions at the outports"*).

If a properly licensed pilot be taken on board, the owners are not responsible for the consequences of *his sole misconduct* where it is compulsory to employ him; and they are not responsible, whether the pilot was taken by compulsion or not, when they are released by an act of Parliament; but in all other cases they are responsible for the acts of the pilot. (See Dr Lushington's judgment in the case of the "*Eden,*" March 1846).

Any pilot offering to take charge of a vessel is bound to produce his license to the master, and if this be not done, the master is in no case liable in penalties for refusing to entrust the charge of the ship to him.

The provisions of the act 6th Geo. IV., c., 125, relating to pilots, and other general information on the subject, may be seen by reference to *Steel's Shipmaster's Assistant.*

PILOT'S FAIRWAY. A passage or channel wherein, according to usage or special regulation, a pilot must be employed. Any part of the sea, or of a river, where the assistance of a pilot is called for, gets the name of *pilot's-water.*

PILOTAGE. The expense incurred for piloting any vessel. Copious information in regard to such charges may be found in *Daniel's Port Charges—Steel's Shipmaster's Assitant*—and *M'Culloch's Dictionary of Commerce.*

Pilotage, also signifies the act of piloting vessels.

PINS. Short cylindrical pieces of wood or iron used for various purposes about a ship : as, the pins which are inserted through the ends of the capstan-bars to prevent their unshipping.

BELAYING-PINS, or *Tacks-Pins,* are pins inserted into holes in the fife-rail and other parts of the vessel when required for belaying running-gear to.

PINK-STERNED. A term implying that a vessel has a round stern finished (by a continuation of the bulwarks aft) with a narrow square part above.

PINNACE. A large boat, having generally three masts, and lateen sails. See also *Boat.*

PINTLES OF RUDDER. See *Rudder-Bands.*

PIPE. A kind of whistle used by the boatswain and his mates to call (or "pipe") the men to their different duties, on board of a ship of war.

PISTON (Steam) and PISTON-ROD. } See description of *Steam-Engine,* Sects. 8 and 9.

PITCH. A substance made by melting coarse hard resin with tar; the proportion of tar is generally one-half the quantity of resin, but it is regulated according to the consistency of the tar. (*Waterston's Cyclopædia of Commerce*). It is used chiefly for paying the seams of a ship or boat, after they have been caulked.

PITCHING. The motion by which a vessel plunges (or

"pitches") her head and stern alternately into the trough of the sea. See *Laboursome.*

PIVOT-GUN. See *Gun.*

PLANET. A celestial body revolving round the sun.

PLANK. Wood sawn lengthways into pieces called *clefts,* less in thickness than in breadth. The term "plank" is seldom applied to pieces exceeding six to eight inches in thickness: when under one and a half inches in thickness, they get the name of "board" or "deal." See *Deals* and *Thickstuff.*

TO PLANK *a ship,* is to cover her timbers with plank.

PLANK-SHEER, *Gunwale,* or *Covering-Board,* in ship-building, a plank which is fitted round the ship, covering all the tops of the timbers, and encircling and securing the timber-heads. It has a moulding on its outer edge, projecting over the paint-strake, whereby the sheer of the vessel is distinctly marked out: hence the name of plank-sheer. (Plate II. fig 6.)

PLUG. A piece of wood fitted into a hole in a ship or boat, in order to let in or keep out water as may be required. See also *Hawse-Plug, Treenail-Plugs,* and *Vent-Plug.*

PLUMBER-BLOCKS, in a marine steam-engine, pieces of metal, wherein are fixed the bushes in which the shafts traverse.

PLYING. The same as *beating to windward.*

The term *plying* also denotes the act of a vessel running regularly between any two ports.

POINT. See *Promontory* and *Reef-Points.*

POINTING *a rope:* the operation of unlaying its end and tapering the inside yarns with a knife, then weaving a sort of mat with the ends of the outer yarns about it; in order that it may thrust more easily through any hole without untwisting, and generally to keep it from fagging.

POINT-BLANK. A gun is laid point-blank for an object, when the axis of its bore and the point aimed at are in one line. If a gun be spoken of as at point-blank, without reference to an object, it is understood that its axis is perfectly horizontal. The *point-blank range* implies the first

graze, supposing the gun horizontal. For farther information on this subject, we may refer to the first volume of the *United Service Magazine* for the year 1830, from which the above explanation is obtained.

POINTERS, SNAKE-PIECES, or BRACES. Pieces of timber fixed fore-and-aft and diagonally inside of a vessel's run or quarter, of a sufficient length properly to connect the stern-frame with the rest of her after-body. The bolts in these pieces ought to go right through and be clinched. Every merchant vessel exceeding 150 tons burden should have "one pair of pointers in addition to a knee at each end of the wing-transom," *(Lloyd's Register)*.

The name POINTERS, is also given to certain pieces of timber which connect the foremost hold-beam of a whale fishing ship with the riders, breast-hooks, and other fortification inside of her bows.

POLAR CIRCLES. See *Zone (Frigid)*.

POLE. The upper end of a vessel's highest mast (main, fore, or mizen) when it projects above the rigging; more particularly that of the royal mast. It is used merely to carry a vane, or for hoisting signals upon. (Plate III. and IV.)

See also *Axis of the Earth*, and *Circles*.

POOP. The highest and aftermost part of a vessel's hull, forming a cabin above the quarter-deck. In ships of war, &c., it is called the round-house. See the article *Deck*. In merchantmen, the quarter-deck, if elevated, is often called the poop.

A vessel is *pooped*, when the sea breaks over her stern. This is apt to occur, especially to a deeply laden ship, if she continue scudding too long in a heavy increasing sea: caution should therefore be exercised in heaving her to in proper time.

POPPETS, in shipbuilding, pieces of wood fixed perpendicularly between a vessel's bottom and the bilge-ways, at the foremost and aftermost parts of the ship, as shores to support her in launching. They are chiefly used, along with up-making, for sharp vessels: if the ship be full built, the up-making, that is to say, a number of planks (some of which are wedge pieces) piled one above another, is alone used for supporting her when launching.

"A piece of timber or plank bolted on to the bottom of the ship over the heads of the foremost and aftermost poppets, in an oblique direction with the plane of the keel, is termed a *Dagger-piece.*"

PORT. The same as harbour. A general name for any place where there are docks or other similar accommodation for vessels. It may be well to notice the legal interpretation of this term as laid down in the case of Gavin against the Sea Insurance Company of Scotland, (*Bell's Dictionary of Decisions of the Court of Session,* p. 548), wherein "it was decided, on appeal to the House of Lords, that 'Port' is not synonymous with 'Harbour,' but is descriptive of any place where there is a constant resort of vessels for the purpose of loading and unloading, with provision made by the government of the country for enabling them to do so."

A very useful book giving accounts of the PORT CHARGES at most of the principal ports and harbours in this country, and at many ports abroad, has been published by Mr James Daniel, of Aberdeen. Much authentic information on this subject is to be found in *M'Culloch's Dictionary of Commerce,* and in *Steel's Shipmaster's Assistant.*

PORT, or PORT-SIDE. The left, (or, as it is called by seamen, the *larboard)* side of a vessel when you stand on board of her with your face to the bows.

By order of the Lords Commissioners of the Admiralty, the term *port* has been directed to be used throughout the Royal Navy instead of *larboard,* in order to prevent mistakes which are so apt to arise at sea from the resemblance between the sounds of the words starboard and larboard.

PORT THE HELM! See *Helm.*

PORTS. Square holes cut in the sides, bow, or stern of a merchant ship, for taking in and discharging timber cargoes, and for similar purposes. Those in the sides are commonly used for ballast, and hence called *ballast-ports.* The others get the name of *raft-ports. Bridle-ports* are ports cut in a vessel's counter, for getting out hawsers either to moor by in harbour, or to clap springs upon. Ports in-

tended merely for the admission of air get the name of *air-scuttles*, or *air-ports*.

The *covers* for these are also called *ports;* they are each secured to a bar of wood inside by means of a rope called the *port-lashing*. See *Port-lifter*.

See also *Row-ports*.

PORT-HOLES, or *Gun-ports*. The ports through which a ship's guns are fired.

The ropes for hauling up and suspending the ports, or covers, for these are termed *port-ropes*, or *port-tackles*. See *Port-lifter*. When the covers are made in two pieces, these pieces are called *half-ports*.

PORTS (STEAM). See description of *Steam-Engine*, Sect. 2.

PORT-FLANGE. See *Flange*.

PORT-LIFTER. A contrivance for raising and lowering any heavy port, invented by Mr Carr, of the firm of Messrs Ritherdon and Carr, London. It consists of a screw fitted inside the ship between two metal standards: a nut is made to run along the screw by turning a crank handle; and to this nut are attached arms, which extend and are fixed to either side of the port.

PORT-SILLS, or PORT-CILLS, in shipbuilding, pieces of timber put in horizontally between the framing to form the top and bottom of a port.

PRAAM. A sort of lighter, used chiefly in the Baltic, for bringing cargoes down the rivers, and also for loading and discharging ships.

PRATIQUE. A licence or permission to hold intercourse with any place, after having performed quarantine, or upon production of a clean bill of health, that is to say, a certificate that the ship did not come from an infected place, *(Maunders's Scientific and Literary Treasury)*.

PRESS, and PRESS-GANG. See *Impressment*.

PRESS SAIL, or CROWD SAIL, to carry a press of sail, that is, a great quantity of sail upon a vessel.

PREVENTER. An additional rope employed occasionally to strengthen and support another rope: as, *Preventer-*

backstays, Preventer-shrouds, Preventer-braces, &c. Preventer-plates, in like manner, signify plates bolted as an additional security to the lower part of the channel-plates on a vessel's sides.

PREVENTIVE SERVICE. The establishment of "coast-guards" (consisting of officers, boats with their crews, patrols, &c.) at numerous stations on the shores of the United Kingdom, for the prevention of smuggling.

PRICK OFF *the Ship* (or *the Ship's place) on a chart.* To mark the ship's place on the chart, after ascertaining her latitude and longitude, or the bearings of the land, &c.

PRICKER. A kind of small marlingspike used in sail-making: it generally has a wooden handle.

PRIMAGE or HAT-MONEY. A small allowance paid to the master of a vessel for his care and trouble in taking charge of the goods laden on board. It varies in amount according to the respective usages of different places; at some ports it is customary for the shipowner to receive and retain it: and it is often commuted for a certain per-centage on the freight.

PRIME *a gun.* To pierce or prick the cartridge with a piece of wire, called a *priming-wire,* inserted through the vent, and put a quill tube filled with a paste made of milled powder and spirits of wine into the vent, and a little powder in the pan, in order to fire the piece. See *Lock.*

PRIVATEERS, may be defined as private ships of war, or vessels having commissions (known by the name of *Letters of Marque)* granted to them, whereby they are empowered to attack enemies without being liable to a charge of piracy, and which secure to the owners and ships' companies a right to the prizes made by them. "Whether a ship taken be lawful prize or not, is tried in the Court of Admiralty." See *Prize.*

PRIZE. A vessel captured from an enemy. In time of war, the Queen's ships, privateers, and merchant vessels fighting in their own defence, have legal right to make prizes; and such prizes, after being condemned in any court which takes cognizance of these matters, are in the same situation

as vessels built or purchased by the possessors, and so are entitled to be registered as British ships. *(Steel's Ship-master's Assistant.)*

When a capture is made by a private ship, a sale is considered the most convenient mode of ascertaining the value of the prize, both for the purpose of regulating the distribution among the captors, and for the payment of duties to the Queen. If any prize taken from the enemy belonged to a British subject, it is in all cases to be restored to him as the original owner, upon his paying in name of salvage, one-eighth of its value if retaken by any of her Majesty's ships, and one-sixth, if retaken by a privateer or other ship. *(Park—Tenterden).*

PRIZING or PUNCHING, implies the act of moving any heavy body by means of a lever.

PROMONTORY. A portion of land projecting into the sea beyond the rest of the adjacent coast. When high or mountainous, the extremity of it towards the sea is called a *Cape;* when it has but little elevation, this is usually styled a *Point, Head,* or *Headland.* (*Norie's Epitome).*

PROPPETS. A name sometimes given to shores, especially when they stand nearly vertical.

PROTEST, in seafaring matters, *(Ship-protest,* or *Sea-protest*), a formal declaration made by the master, mate, and part of the crew of a merchant vessel before a Notary-public, or if there be no notary at hand, before a consul, justice of the peace, or any other person empowered to perform notarial acts; which declaration is written out, or (as it is termed) *extended,* on stamped paper, and should detail the material events of the voyage and the particulars of the accident or accidents on account of which it is taken, being made up of faithful but amplified extracts from the log-book. The tonnage of the vessel, also, should always be mentioned in the protest. See the article *Notary.*

When any misfortune has happened, the master should cause a protest to be noted within forty-eight hours after the ship's arrival at her port of destination, or at an intermediate port, if any such port have been sought in distress, and to be

afterwards extended. In trifling cases, the insurers and other parties concerned sometimes agree to settle claims upon production merely of an extract from the log-book, signed by the captain: and, Mr William Richards of Lloyd's observes, that where there is no more than damage to a few goods, this extract is all that is required, it not being the practice to charge the expense of noting and extending a protest against the underwriters in adjustments of particular average on damaged goods. In every case of average claim it is desirable that the log-book itself, or a full extract from it, be produced along with the protest.

If there be no means whatever of noting a protest at the place where a vessel happens to be wrecked, the proper course of the master is to use every means in the first place to save the property, and then to take steps for protesting. *(Lorimer's Letters to a Young Master Mariner).*

There are other kinds of *Protests;* for example, that which a master takes when a vessel comes on demurrage, and that which is taken by him when he finds himself justified (under a contract for a full cargo) in proceeding on the voyage with an incomplete lading.

PROVISIONS shipped on board a vessel for the use of the master and crew, are held to be included, in any general policy of insurance on the ship, as part of her outfit. "Provisions for passengers," however, (Mr Richards of Lloyd's remarks) "are not part of the outfit of the ship, but a distinct interest. Outfit includes only those things which are intended for the use and service of the ship and her crew for the voyage." Provisions for passengers he considers also to be sufficiently covered by insuring the gross amount of passage money, which insurance the shipowner is entitled to effect if the passage money be payable at the port of destination. "Should his contract with the passengers oblige him to send them forward in case of the wreck of the ship, a special clause providing for such an occurrence would be requisite to be inserted in the policy, as insurance on passage money, in the ordinary form, does not cover such an expence."

"In the case of *Brown* v. *Stapleton* (4 *Bing* 119), where

a ship going to New South Wales with convicts incurred a general average in the Downs, the provisions and stores put on board for the supply of the convicts were held not liable to contribution."

The preceding remarks, as well as the general application of the decision here quoted, appear to be subject to slight qualification. See the articles *Outfit* and *Passengers*.

By the Merchant Seamen's act, 7th and 8th Vict. c. 112, it is made imperative on the master of every vessel which is required to have a written agreement with the seamen before proceeding to sea, to specify in such agreement what quantity of provisions each seamen is to receive; and if during the voyage it become necessary to reduce this allowance, the seaman is entitled, while the short allowance is continued, to compensation of fourpence a day if the reduction be one-third, and eightpence if more than one-third of the stipulated quantity. Observations on the scales of provisions, with lists of the average number of days which the custom-house authorities have assigned for the voyage to and from various ports, and of the goods allowed to be shipped as stores duty free, as well as a copy of the scale of victualling in use in the Royal Navy, may be found in "*The Shipmaster's Guide by the Registrar of Seamen*."

Besides keeping a sufficient supply of medicines on board, as all ships are, by the above-mentioned act, required to do, in accordance with the scale which shall from time to time be issued by the Admiralty, and published in the *London Gazette*, the master of any vessel, except those bound to European ports or to ports in the Mediterranean, must have also on board a sufficient quantity of lime or lemon juice, sugar, and vinegar, to be served out to the crew whenever they shall have been consuming salt provisions for ten days; the lime or lemon juice and sugar daily, after the rate of half an ounce each per day, and the vinegar weekly, at the rate of half a pint per week to each person, so long as the consumption of salt provisions be continued. In the Royal Navy, lime and lemon juice are issued daily, in the same proportions as above, after the crew have been a fortnight on salt provisions.

PROW. A name for a vessel's bow.

PUDDENING. A quantity of yarns, mats, or oakum wrought round a rope, to make a stop upon it, or for other purposes. Puddening was also laid round rings of anchors, when rope cables were in use, to prevent chafing.

PUMP. A well known machine for drawing up water. The common working pump used in merchant vessels consists of a cylindrical tube or pipe, the upper part of which widens out to form a chamber for the *Pump-boxes:* the lower pump-box is fixed at the foot of this chamber, which it fits tightly; the upper or working box is moved like a steam-piston up and down in the chamber by means of a rod called the *Pump-spear,* the lever attached to which gets the name of the *Pump-brake.* Both of the pump-boxes have valves opening upwards, through which the water is made to rise in a manner similar to what is described of the air-pump under section 18 of the article "*Steam-Engine.*" The Pump-brake works on a bolt inserted through the head of a standard which is fixed to the upper edge of the pump. The pumps of a vessel are, however, often worked by means of a contrivance called the *vangee:* this usually consists of a barrel of an octagonal form turning backwards and forwards on a pivot fixed in a frame between the pumps: the pump-spears are attached by arms to this barrel, and the pumps are worked by two brakes inserted into it at right angles to each other, with ropes attached to their ends for hauling upon. See *Well.*

The Chain-pump, used in ships of war, but very rarely in merchantmen, is composed of two long metal tubes let down through the decks somewhat apart from each other, but united together at their lower ends, in which many small holes are pierced to admit the water. Above the upper extremities of these tubes there is fixed a sproket-wheel worked by crank-handles: over this wheel, and passing through both tubes, is placed an endless chain having a number of bucket-valves or pistons fixed to it at certain distances, and turning round a friction-roller in the lower joint of the tubes. The tube by which the water ascends has a narrow chamber which

the valves nearly fit, while the other parts of both tubes are wider so as to avoid any friction. The chain with its bucket-valves being set in motion by means of the crank-handles, passes down through one tube, and up the other tube in which the valves raise the water very rapidly.

The various pumps connected with marine steam-engines are noticed in the alphabetical index at the end of the description of the *Steam-Engine.*

Bilge-Pumps. Small pumps used for drawing off any water which may lodge about the bilges of the ship when she is lying so much to one side that the water does not reach the foot of the main pumps. See also description of *Steam-Engine,* Sect. 26.

Head-Pump. A small pump fixed at the vessel's bow, its lower end communicating with the sea, and protected by a rose: it is used for washing the decks.

PUMP-BRAKE. See description of *Pump.*

PUMP-CISTERNS. Cisterns fixed over the heads of chain-pumps to receive the water; whence it is conveyed through the ship's sides by the pump-dales. *(Shipwright's Vade Mecum.)*

PUMP-DALE. A wooden spout for leading water from the pumps over or through the ship's side without wetting the decks.

PUMP-SPEAR. See description of *Pump.*

PUNCH. An iron instrument used for starting bolts *in* a little, or for driving them out: the punch used for the latter purpose, is called a *Teaming-punch;* the other, a *Starting-punch.* See also *Prizing.*

PUNT. A species of boat, or large square-built vessel without masts or sails, employed as a lighter for carrying goods. Such vessels are also used for receiving the mud, &c., from dredging-machines.

A sort of oblong flat-bottomed boat like a floating stage, used by shipwrights and caulkers for any work to be done to a vessel about the water's edge.

PURCHASE. A name given to any sort of mechanical power, as a capstan, windlass, tackle, lever, or the like

which increases the force applied to raise or move heavy bodies. Hence, the name *purchase-blocks* is given to such blocks as are used in moving very heavy weights. The term *purchase* is also applicable to the increase of force thus acquired. *To purchase,* is to move any thing by means of a purchase.

PURSER. An officer who has charge of the provisions and such like stores of a ship of war.

The Purser's Steward, is a kind of deputy purser, who delivers and keeps an account of stores expended or received.

QUADRANT. An instrument used at sea to take the altitude of the sun, or moon, or of any star, in order to estimate the latitude of a place, or to take the sun's azimuth for the purpose of ascertaining the magnetical variation.

The following is a general description of Hadley's Quadrant, abridged from *Norie's Epitome of Navigation.* The *Octant* or frame of ebony or other hard wood, consists of an arc or limb divided into ninety degrees, firmly attached to two *radii* or bars to which it is bound by two braces to prevent it from warping. On the centre of the instrument there is a flat brass bar *(the index)* with a scale, called a "Nonius scale," fixed to an oblong opening near its lower end. To the index there is also fixed a plane speculum or mirror of glass quicksilvered, called *the index glass,* which moves along with it, and is designed to reflect the image of the sun or other object upon either of the horizon-glasses, whence it is reflected to the eye of the observer. *The Horizon-glasses* are two small speculums on one of the *radii;* the one half of the fore horizon-glass is silvered, while the other half is transparent, in order that an object may be seen directly through it; the back horizon-glass is silvered at both ends, and in the middle there is a transparent slit through which the horizon may be seen. *The dark glasses* or *shades* are for preventing the bright rays of the object from hurting the eye of the observer. *The sight vanes* are pieces of brass standing perpendicularly to the plane of the instrument: that one

which is opposite to the fore horizon-glass is called the fore sight-vane; the other, the back sight-vane.

QUARANTINE LAWS, consist of certain regulations suspending intercourse, for a limited time, with vessels arriving from places affected by, or suspected to be visited with, contagious diseases, and subjecting the goods on board of such ships to a process of ventilation, and, in some cases, of fumigation. This performance of "Quarantine" varies in duration from five to forty days, from which last number (*quarante* in French) the term is derived. In some parts of the Mediterranean, quarantine is performed in *Lazarettoes* established for receiving persons and goods coming from infected places.

A BILL OF HEALTH, is a document obtained from the consul or other proper authority at any port, certifying the state of health in the place, and that of the ship's company at the time of her departure therefrom. If *a clean bill* (which is a certificate that the ship did not come from an infected place), it generally exempts the ship from quarantine, but not so, if a *suspected* or a *foul bill.*

QUARTER. That part of a vessel's side which is between the after part of the main chains and the stern. See *Bearing.*

See also *Chime* and *Yard.*

QUARTER-BOARDS, or TOPGALLANT QUARTER-BOARDS. A thin bulwark boarding, forming an additional height to the bulwarks at the after part of a vessel. They also get the name of *Topgallant bulwarks.*

QUARTER-DECK. See *Deck* and *Poop.*

QUARTER-FAST. See *Fast.*

QUARTER-GALLERIES. See *Gallery.*

QUARTER-GUNNER, in a ship of war, an able seaman, generally one of the gunner's crew, appointed to act as his assistant under the gunner's mates.

QUARTER-MASTERS, in a ship of war, attend to the steerage of the ship under the direction of the officer of the watch: they have also to attend to the stowing of the hold, the hoisting of signals, &c.

QUARTER-PIECES. Pieces of timber, one of which is bolted on the after end of each of a vessel's quarters: they are intended principally to cover in the after butts of the planking in the quarter: if there be a quarter-gallery, the quarter-piece forms its after end.

QUARTER-STANCHIONS. Strong stanchions in the quarters of a square-sterned vessel, one of which forms the outmost boundary of the stern on either side: it connects the main rail with the taffrail; the afternost planks of the top-sides and the planks of the stern are bolted to it, and, in addition to other fastenings, its tail is secured by knees and bolts to the wing-transom. (Plate II. Fig. 5.)

QUARTER-TIMBERS. The framing timbers in a vessel's quarters.

QUARTER-WIND. A wind blowing upon a vessel's quarter. It is then said to be *quartering.*

QUAY. A convenient erection for vessels lying alongside in order to discharge and take in cargoes.

QUICK-WORK. The same as SPIRKETTING. Also, a term for the planking between the quarter-deck ports in a ship of war.

QUOIN. A sort of wedge placed on the bed of a gun-carriage for the breech of the gun to rest upon. See also *Beds.*

RABBET or REBATE, in shipbuilding, an angular groove made in one piece of wood to receive the edge or end of another piece: as, in the keel for the edge of the garboard-strake, or in the stem and stern-post for the hooding-ends.

RACK. To seize two ropes together with cross turns. *To rack a tackle,* is to seize the two opposite parts of the fall together, in order to prevent it from rendering through the blocks.

A Rack, is a name for a board with holes in it, seized to the standing rigging below a vessel's top as a fair-leader for running rigging. See also *Rack-Block.*

RACK-BAR. A billet of wood used for twisting the

bight of a swifter round, in order to bind a raft firmly together.

RACK-BLOCK, or RACK. A course of blocks made in one piece of wood to act as fair-leaders.

RACKING. Spunyarn or other stuff used to rack two parts of a rope together.

RADIUS BAR OF PARALLEL MOTION. See description of *Steam-Engine*, Sect. 21.

RAFTS, are generally formed of one tier of logs, or of several tiers laid across each other, bound round by swifters, and also secured by means of raft-dogs, with chains rove through them. See *Rack-Bar*, *Catamaran*, and *Fire-Ship*.

RAFT-DOG, or *Rafting-Dog*. A broad flat piece of iron, having a sharp point, and, at its other end, an eye formed through which the raft-chains are rove.

RAFT-PORTS. See *Ports*.

RAIL, or ROUGH-TREE RAIL. The moulded planks which are mortised into the head of the stanchions, and, in some cases, into the timber-heads, forming the upper fence of a vessel's bulwarks.

There are also rails at other parts of the ship, as follows:

FORECASTLE-RAIL. The rail extended on stanchions across the after part of the forecastle deck. In like manner, that across the fore part of the poop or quarter-deck is termed the *poop-rail*.

TAFFRAIL, or *Tafferel-Rail*. The rail over the heads of the stern timbers, extending across the stern from one quarter-stanchion to the other.

TOP-RAIL. A rail extended on stanchions across the after part of each of a vessel's tops.

See *Counter-Rail*, *Fife-Rail*, *Head-Rails*, *Stern-Rails*, and also *Nettings (Hammock)*.

RAISE *the tacks*, or *the sheets*, of square sails, implies to slack them off.

RAKE, in shipbuilding, "the overhanging of a vessel's stem or stern beyond a perpendicular with the keel, or of any part or thing that forms an obtuse angle with the

horizon." *(Shipwright's Vade Mecum).* This term is applied *to masts* when they incline aft; if the inclination be in the opposite direction, they are said to be *stayed forward.*

To rake a ship, is to fire into her in the direction of her length.

RAM. A long piece of hard wood hooped with iron at each end, and having an iron rod attached on each side as a handle; used in shipbuilding for driving out blocks from beneath a vessel's keel, and for driving planks an-end, when wedged to the ship's side before being fastened, &c.

RAM-LINE. In shipbuilding, a small rope or line used for setting the frames fair, and also for forming the sheer of the ship: when used for the latter purpose it is adjusted on the ship's side by means of a long thin plank, called the *sheer-mould,* which has one of its edges curved to the extent of sheer intended to be given.

A new vessel is said to be *ramed,* when all the frames are set upon the keel, the stem and stern post put up, and the rames properly adjusted with the aid of the ram-line.

RAMMER. See *Sponge of a Gun.*

RANGE OF CABLE. A portion of a vessel's cable slackened round the windlass or bitts, and the bight of it laid abaft the same, of sufficient length to allow the anchor to sink to the bottom without check.

RANGE, in gunnery, the path or line described by shot from the mouth of the gun whence it is fired to the point where it first grazes or lodges. See *Point-Blank.*

RANGE-HEADS. A name sometimes given to the windlass-bitts.

RANSOM, in war, a price paid for the liberty of a prisoner, or for the restoration of a captured vessel, or of other property taken by an enemy. Also the act of redeeming from imprisonment or capture.

By statute 22 Geo. III., c. 25, the ransoming of any British ship captured by an enemy, or of any property on board of it, is declared unlawful, and is guarded against by a heavy penalty. It follows, therefore, as a necessary consequence,

that money paid for ransom thereof, could neither be recovered from underwriters, nor form the subject of average. (*Park on Insurance*).

See *Capture.*

RASING. Marking with a knife the form of a mould on a piece of timber; or making any mark with a RASING KNIFE, which is a particular kind of knife hooked at its point.

RASING-IRON. A species of caulking-iron having its end bevelled with a sharp point, for clearing the pitch and oakum out of a vessel's seams when required, in order to be caulked afresh.

RATES *of Ships of War.* See *Navy (Royal).*

RATLINES, or RATLINGS. The lines stretched horizontally from shroud to shroud, used to step upon in going aloft, or in coming down from the mast heads.

RATTLE-DOWN RIGGING. To fix ratlines upon the rigging.

RAVE-HOOK. An iron instrument used by caulkers to get the oakum thoroughly out of a vessel's seams, when a rasing-iron would not penetrate deep enough.

RAZEE. A vessel cut down from a larger to a smaller size. In such a case the ship is said to be *razeed.*

REACH *of a winding river,* means any part of it which runs in a straight course.

In seamanship, the term *reaching* is used in the same sense as *standing* off and on; a vessel also is said *to be on a reach,* when she is sailing by the wind upon any tack.

READY-ABOUT. See *About.*

REAMING. [REEMING].

REBATE. See *Rabbet.*

RECEIVING-SHIP. A vessel employed at any port to receive supernumeraries, or pressed, or entered men for the Royal Navy; the Port Admiral's ship is generally selected for this purpose.

RECKONING. The estimation of a vessel's position by the courses steered and distance run. When this is made merely by means of the log and compass, it is termed *dead reckoning,* which requires to be corrected as soon as an ob-

servation of the sun or of other heavenly bodies is practicable.

RECOIL, in naval gunnery, the distance that a gun runs in upon deck, after being fired; it more strictly implies the act of its running in.

RECONCILE, in shipbuilding, to make one line join fair with another, or one piece of work answer fair with the moulding or shape of another piece. This term is especially applied to the reversion of curves.

REEF. To reduce a sail by taking in upon its head, if a square sail,—upon its foot, if a fore-and-aft sail.

A reef, is that part of a sail which is comprehended between the head or foot of the sail, and the first reef-band, or between any two reef-bands.

A balance reef, is a fourth reef, used for the try-sail when lying to.

REEF-BAND. A band of stout canvass sewed on in the way of the eyelet holes, in order to strengthen a sail at that part.

REEF-PENDANT. A rope going through a cringle in the after leach of a boom-mainsail and through a sheave-hole in the boom, with a *tackle* attached to its end to rouse the after leach down to the boom while reefing.

REEF-POINTS. Small pieces of line (commonly *white-line*) made fast at their middle in the eyelet holes for tying a sail up to the yard in the act of reefing it.

REEF-TACKLE. A tackle attached to each of the topsails of a square rigged vessel for the purpose of tracing or lightening up the leach in the act of reefing. See also *Reef-Pendant.*

REELS. Of these well known machines for winding lines upon, the kinds used by seamen are for the *deep-sea-line* and *log-line.* See *Lead* and *Log.*

REEMING, in shipbuilding, opening the seams of the planks with iron wedges, called *reeming-irons*, in order that the oakum used in caulking may be more readily admitted: the mallet commonly used for driving them is called a *Beetle.*

REEVE. To pass the end of a rope through a block or any aperture. *To unreeve* is the opposite term.

REFIT. To repair damages and put a vessel in proper order for proceeding to sea. The term is also applied to putting the rigging in proper condition and setting it up again.

REFRACTION. An inflexion of the rays of light which proceed from any object. Thus the rays proceeding from a celestial body when they enter the atmosphere in an oblique direction, are turned out of their straight course, and incline more and more towards the centre of the earth as they pass deeper into the atmosphere; they consequently strike the eye of an observer in a different direction from that of the object, and make it appear higher than its real place. "This refraction or difference has therefore to be deducted from the apparent altitude of any object." "An object at the zenith is not subject to refraction; and its effects increase proportionally as the body is nearer the horizon, where the refraction is greatest." (*Norie's Epitome.*)

REGISTRY OF SEAMEN. The Merchant Seamen's Act, 7 and 8 Vict. c. 112, established, at the customhouse in London, a General Register and Record Office of Seamen, and by sect. 20, all male subjects of Her Majesty desiring to serve on board a British ship (except as master or surgeon) must apply personally for a REGISTER TICKET at that office, or at a customhouse at any outport of the United Kingdom: the master also must accompany every apprentice to procure in like manner his register ticket, which is to be kept annexed to the indenture, and delivered up by the apprentice to the master at the expiration of the apprenticeship. Every applicant for a register ticket is required to answer to the best of his ability the questions set forth in schedule (F) of appendix to the above statute. The master must obtain from each seaman his register ticket before proceeding to sea, and return it when his service terminates, or when he enters the Royal Navy.

When a seaman appears to have unavoidably lost his ticket, or when it becomes defaced or worn out, a new one will be granted without charge: in case of apparent neglect, a fine varying from two shillings to ten shillings, is exacted.

The tickets of deserters, deceased seamen, &c., are to be delivered up to the registrar of seamen, *(sections* 9, 21, 23, *and* 31, *of the act).* Lists of cancelled tickets are issued half yearly, and supplied gratis to the masters or owners of vessels, on application at any customhouse in the United Kingdom or Colonies.

Full explanations on this subject, with a copy of the act itself, may be seen in the *Shipmaster's Guide, by the Registrar of Seamen,* as well as in *Symons's Law relating to Merchant Seamen.*

REGISTRY OF SHIPS. In order to entitle any vessel to the privileges or advantages of a British ship, she must be duly *registered* in terms of the Acts 3 and 4 Will. IV., c. 55, and 1 and 2 Vict. c. 113, abstracts whereof may be seen in *M'Culloch's Dictionary,* or in *Waterston's Cyclopædia of Commerce.* This subject is ably and fully discussed in Serjeant Shee's edition of *Tenterden on the Law of Merchant Ships and Seamen.* If a vessel, not duly registered, and not having obtained the necessary certificate of registry, exercise any of the privileges of a British ship, she is liable to forfeiture.

RE-INSURANCE. See the article *Insurance* (*Marine*).

RELIEVING-TACKLES. Tackles hooked to the tiller in a gale of wind to steer by, when any accident happens to the wheel or tiller-ropes.

Also, a name for tackles passed under a vessel's bottom during the process of heaving down, in order to prevent her being canted over too much.

RENDER. To adjust a rope so that it may pass freely when hauled upon. The rope also is then said to render. A tackle in like manner renders, when it is overhauled freely.

RENDEZVOUS. The place appointed for a fleet of merchantmen to join convoy, or where the ships of any fleet are to rejoin in case of separation.

A name for any house on shore, used in entering men for the Royal Navy, or by a press-gang for securing men who are impressed.

RENTS, or SHAKES. Openings or cracks which take place in timber or planks when much exposed to the heat of the sun.

Original defects of this kind in wood are called SHAKES.

REPEATERS, or REPEATING-SHIPS. Vessels of war appointed by the admiral to repeat his signals throughout a fleet.

RHUMBS or RHOMBS. See description of *Compass.*

RIBS. A figurative expression occasionally used for the frame timbers of a vessel. In iron ships, the angle-iron frames *commonly* get the name of ribs.

RIBBANDS or RIBANDS, in shipbuilding, pieces of wood temporarily nailed on the frames lengthways, in order to keep the body of the ship together and in its proper shape till the planking is brought on. The shores are set up beneath them. (Plate II. fig. 7). *The Floor-ribband*, runs round a little below the floor-heads, for the support of the floors. *The Floor-guide*, is a ribband which is placed between the floor-ribband and the keel.

RIBBAND-LINES. Diagonal lines laid down on the body-plan: by means of these are marked off upon the moulds the points, called *surmarks*, where the respective bevellings are to be applied to the timbers. After the frames are put up, the ribbands are run over these points or nearly so. In order to get the true bevellings of the different timbers, the ribband-lines are taken from the body-plan and laid down horizontally on the floor-plan; the bevellings are then taken at the above-mentioned points where the lines representing the frames intersect the ribband-lines so laid down.

RICKERS. Poles about twenty to thirty feet long, by four feet in diameter, which are cut up in lengths for the purpose of stowing flax and hemp, particularly in the Baltic.

RIDE AT ANCHOR. To lie at anchor, that is, to be anchored.

To ride athwart, means to ride with the ship's side to the sea or current. *To ride between wind and tide*, is to ride athwart by means of the opposite influences of the wind and tide.

Again, a vessel is said *to ride easy*, when she bears little strain on the cable, and does not pitch or roll severely. *To ride hard* is the reverse term.

RIDING-BITTS. See *Bitts*.

RIDE *down* any thing, to bend or bear it down by main strength and weight.

A rope, also, is said *to ride*, when one turn gets over another so as to jam it in heaving on a capstan, windlass, or winch.

RIDERS, in shipbuilding, pieces of wood or iron fayed to the inside of a vessel at any part longitudinally, diagonally, or vertically, to bind her and give additional strength. See the articles *Braces*, *Keelson*, and *Trussing* (*Diagonal*).

The term *Riders* is applied also to any tiers of casks stowed above the ground-tier or above any other tier in a vessel's hold.

RIDGE. A stretch of rocks, sand, or shingle.

RIDGE-ROPES (or MAN-ROPES). Two ropes fastened to iron stanchions on the top of the knight-heads, and running out one on each side of a vessel's bowsprit (above it) to the heart, for the men to hold on by when going out on the bowsprit. The bowsprit-netting, for stowing the foretopmast staysail in, is lashed between them about the bowsprit end. (Plate III).

RIG. To fit the standing and running rigging to a vessel's masts, &c.

RIG *the capstan*. See *Capstan*.

RIG OUT *a boom*: to run it out from a yard, in order to extend a sail upon the boom.

RIGGERS. Men employed to rig and unrig, or to dismantle ships.

RIGGING. A general name given to all the ropes or chains about the masts, yards, and other spars of a vessel.

The shrouds with their ratlines also are distinguished into *main-rigging*, *fore-rigging*, *mizen-rigging*, *maintopmast-rigging*, *&c.*, according to the masts with which they are connected.

Running rigging, implies the ropes or chains that are used

for hoisting the sails, bracing the yards, and for similar purposes.

Standing rigging, is that which is set up for the support of the masts; as, the shrouds and stays.

RIGHT. A vessel is said *to right,* or *to be righted,* when she resumes her vertical position after having been listed over by the force of the wind or otherwise.

RIGHT THE HELM. See *Helm.*

RING-BOLTS. See *Bolts.*

RING-DOGS. See *Dogs.*

RING-TAIL. A small sail shaped like a jib, set occasionally in light winds; it is hoisted on the outer end of the main or spanker gaff, and extended on a boom called the ring-tail *boom,* which is rigged out for this purpose on the main or spanker boom. The maintopmast studding-sail is sometimes used in this way.

RIPPING-IRON. A tool used in stripping copper, or thin wood-sheathing, off a vessel's bottom.

RISING-FLOORS. See *Floor.*

RISING-LINE. See *Shipbuilding.*

ROACH. An upward curve in the foot of a square sail.

ROAD or ROADSTEAD. "A place where there is anchorage and a certain degree of shelter for shipping."

ROBANDS. See *Rope-bands.*

ROCKET. This well known kind of firework is used in the naval service for signals.

Congreve-rockets, so named after the inventor, are destructive missiles, peculiarly serviceable for naval bombardment.

ROGUE'S YARN. A thread of worsted in the strands of rope manufactured for the Royal Navy, introduced for the purpose of detecting theft or embezzlement: a different coloured worsted being used in each dockyard, it serves also to trace any bad rope to the precise yard where it was made.

ROLLING. That motion by which a vessel vibrates from side to side. On this subject there occur in the *Shipwright's Vade Mecum* some valuable remarks which point out the importance of regulating the stowage of ballast and

cargo, so that the centre of gravity may not be *too much* lowered. See *Laboursome* and *Stowage.*

ROLLING-CHOCK, or ROLLING-CLEAT. A piece of wood fastened to the middle of an upper yard, with a piece cut out of its centre so that it may half encircle the mast, to which it is secured by an iron parrel enclosing the other half of the mast. The purpose of this is for steadying the yard.

ROLLING-TACKLES. Tackles sometimes attached to a lower yard, to steady it in a heavy sea. They are not required with iron trusses.

ROMBOWLINE. "Condemned canvass, rope, &c."

ROOM-and-SPACE, or ROOM-and-TIMBER. See *Timber-and-Room.*

ROPE is composed of hemp or other stuff, spun into large threads, which are called *rope-yarns.* A number of these yarns twisted together form a *strand,* and three or more strands twisted together form the rope. If composed of four strands (or, to use the technical term, "four cant") the strands are twisted round a small strand, which gets the name of a *heart.*

The smaller rope used on board a vessel, such as the cordage for running rigging, &c., is made of three strands. *Cable-laid* or *Water-laid rope* is formed by three of these smaller ropes laid up into one. It is used for rope cables, hawsers, towlines, warps, &c. The first is termed *right hand rope,* being laid up and coiled with the sun. Water-laid rope is coiled in the contrary direction, that is, to the *left hand. Shroud rope,* is a finer quality of rope used for standing rigging. *Twice laid rope,* means rope the strands of which have been taken down, and the best yarns selected and laid up again.

See *Cordage* and *Wire-Rope.*

To rope a sail, is to sew the bolt-rope round its edges.

BOLT-ROPE.
FOOT-ROPES.
MAN-ROPES.
MAST-ROPES, or *Top-ropes.*
TILLER-ROPES.
} See these articles respectively.

ROPE-BANDS, or ROBANDS. Small pieces of two yarn

foxes plaited, or of sennit or spun-yarn, sometimes used to confine the head of a sail to its yard or gaff. They are not used with *jackstays ;* a number of turns of a single rope-yarn being sufficient to secure the head of a sail to the jackstay.

ROPE-YARN. See description of *Rope.*

ROSE, or STRAINER. A plate of copper or lead perforated with small holes, sometimes placed upon the heel of a pump to prevent any thing being sucked in which might choke the pump. Roses are also nailed for the like purpose, upon the holes which are made in the bottom of a steam-ship to admit water for the boilers and condensers.

ROUGH-TREE. An unfinished spar.

ROUGH-TREE RAIL. See *Rail.*

ROUND-AFT, in shipbuilding, the outward curve or convex form of the stern from the wing transom upwards.

ROUND IN. To haul in on a rope ; especially on a weather brace.

To round in a Tackle, means to haul in the slack of it in a horizontal direction ; the term *round up* is applied in a similar manner when the tackle is in a vertical or sloping direction. The reverse of these is *to overhaul the tackle.*

ROUND-TURN. *To take a round turn of a rope,* means to pass it completely round any thing in order to hold on. See also *Hawse.*

ROUND-UP *of the Transoms ;* the segment of a circle to which they are sided ; *of beams,* that to which they are moulded, *(Shipwright's Vade Mecum).*

ROUND-HOUSE. An erection at the middle of a vessel's deck, generally abaft the main mast, for the accommodation of the officers. In some vessels, a round-house is fitted up for the use of the crew.

In ships of war, this name is given to the poop ; and hence the beams on which the poop rests are called the *round-house beams.*

ROUNDING. A service of rope wound round a spar, or round a larger rope, to prevent chafing. The operation itself is called *rounding.*

ROUNDLY. Quickly.

ROUSE. The same as to haul.

ROVING-COMMISSION. An authority granted by the Admiralty to the officer in command of a vessel to cruise wherever he may see fit.

ROW. To move a boat or vessel by pulling the oars or sweeps.

Row-locks. Spaces cut in the gunwale of a boat, for the oars to rest in while pulling. In some boats, the rowlock is formed merely by two pins, called *thole-pins*, inserted into the gunwale, between which pins the oar works.

Row-ports. Ports cut through the sides of any small vessel that may have occasion to use sweeps during calm weather.

ROYAL. The small square sail set, in light winds, on the royal-mast and royal-yard (main, fore, or mizen). See *Mast.*

ROYAL NAVY. See *Navy.*

RUDDER, or Rother, that part of the helm which is hung to the after part of a vessel's stern-post, and which is turned by the tiller so as to expose either side of it to the resistance of the water, in order to govern the direction of the ship's motion. There are two kinds of *patent rudders*, which it may be well to notice, constructed so as to prevent water from getting into the rudder-case when the ship happens to fetch sternway. One of these is formed with an elbow, or bend inwards, beginning at the lower part of the rudder-case, whereby the centre of the upper part of the rudder-stock, which is rounded and fitted with great nicety, is brought to work in a line with the pintles: the other has the fore part of the main piece (or "rudder-stock") rounded so that it may fit into a hollow made in the stern-post to receive it, and the irons (or hinges) of the rudder so constructed that the rudder may turn upon a true axis at the centre of the stock.

Rudder-Bands, Rudder-Braces, or *Rudder-Irons.* The iron or composition hinges on which a rudder turns.

That part of the rudder-band which is bolted to the stern-post, and into which the pintle goes down, is called the *rudder-gudgeon* or *chalder.*

A Dumb-Chalder, is a sort of cleat (iron or composition) bolted to the back of the stern-post, for one of the pintles to rest upon, in order to keep the strain off the necks of the other rudder-pintles generally, and so lessen the friction.

The Rudder Pintles, are the projecting prongs of the rudder-irons bolted to the rudder, and made to fit into a hole in the gudgeons, through which they pass down, and thus form hinges for the rudder to traverse upon.

RUDDER-CASE, or *Rudder-Trunk.* A casing of wood fitted or boxed firmly into a round hole, called the *helm-port,* in a vessel's counter: through it the rudder stock is inserted.

RUDDER-CHAINS. The same as *Rudder-Pendants.*

RUDDER-CHOCKS. Pieces of fir made to fit the excavation on each side of the rudder-stock, in case of the tiller being broken, and its being necessary to steady the helm amidships, while shipping a new tiller: they are in some cases also used when a vessel is at anchor.

RUDDER-COAT. See *Coat.*

RUDDER-GUDGEON. See *Rudder-Bands.*

RUDDER-HEAD. See *Rudder-Stock.*

RUDDER-IRONS. The same as *Rudder-bands.*

RUDDER-PENDANTS. Two ropes or chains attached to the back of a rudder, or hooked to a kind of iron crutch termed the *horns,* bolted to the back of the rudder, in order to steer the ship in case of the main piece (or "stock") being broken about its upper end, or the tiller or any part of the steering apparatus being broken or rendered unserviceable: they also serve to save the rudder from being lost, should it by any accident be unshipped. These are used mostly in large ships.

RUDDER-PINTLES. See *Rudder-Bands.*

RUDDER-STOCK. A name for the *main piece of the rudder,* which is connected by the rudder-bands to the stern-post. Its upper end, passing up through the vessel's counter to the deck, and into which the tiller is fitted, is called the *Rudder-Head.*

RUDDER-TRUNK. The same as *Rudder-case.*

RULE-STAFF. A lath about four inches in breadth; used, in shipbuilding, for measuring the curve of a plank's edge in order to fay another plank to it. See *Spilings.*

RUN. That part of a vessel's bottom abaft, which rises from the keel and bilge, and narrows towards the stern-post.

With reference to the ship's progress, also, we say she has *run* so many knots in an hour and so forth.

Seamen are said to be *engaged by the run*, when they ship with the intention of leaving the vessel at a certain port of destination.

To let go by the run, means to let go anything altogether, instead of merely slacking off the rope or tackle by which it is held fast.

RUNNER-and-TACKLE. A particular kind of purchase, resembling a burton, used chiefly in sloops. (Plate IV).

RUNNING BOWSPRIT, and RUNNING RIGGING. See *Bowsprit* and *Rigging*.

SADDLE. A piece of wood fitted on a mast to bear up the inner end of a boom. In some parts of England this gets the name of a mast-rim.

SAFETY-VALVES. See description of *Steam-Engine*, Sects. 41, 36, and 44.

SAG, when applied to the *hull of a vessel*, is the reverse of hogging. In seamanship, *to sag to leeward*, is the same as to fall to leeward when sailing close-hauled.

SAILS are of two descriptions: *Square-sails*, which hang from yards athwartships, as the courses, topsails, &c., of a square-rigged vessel; and *fore and aft sails*, which are set upon gaffs, booms, or stays, lengthways of the vessel. (Plates III. and IV.)

Sail, is also a general name for any ship or ships when under canvass at sea. *To sail*, is to move through the water by means of sails.

Crowd Sail, or *Press sail*. To carry a "press," or great quantity, of sail on a vessel.

Make Sail. The same as to set sail; or more particularly, to increase the quantity of sail set.

Set Sail. To spread a vessel's sails to the wind in order to get under way.

Shorten Sail. To take in part of the sails that are set, either by reefing or furling, or by both of these operations.

SAIL-CLOTH. The same as *Canvass*.

SAIL-HOOK. A small hook used for holding the seams of a sail square in the act of sewing.

SAILING. The following are the different modes of navigating vessels; which can be properly understood only by consulting the scientific explanations which are given in treatises on navigation.

"CURRENT-SAILING. In places where there is a constant current or setting of the sea in a particular direction, allowance must be made for the change of the ship's place arising therefrom. The method of resolving those problems in sailing in which the effect of a current or of the heave of the sea, or of both, is to be taken into consideration, is termed *Current-sailing.*

"MERCATOR'S SAILING, consists in finding the difference of longitude by considering the meridians as parallel lines, and, of course, every parallel of latitude as equal to the equator. For this purpose, a table of meridional parts (from which Mercator's chart is constructed) is employed.

"MIDDLE LATITUDE SAILING. In this, the departure computed by plane sailing is considered as a meridian distance, and the difference of longitude, on that supposition, is computed as in parallel sailing.

"OBLIQUE SAILING, consists in the application of oblique angled triangles to various cases at sea, as in coasting, surveying, &c.

"PARALLEL SAILING, consists in finding the difference of longitude from the departure made good, that is to say, from the distance sailed due east or west.

"PLANE SAILING, is founded on principles deduced from the supposition of the earth being an extended plane.

"TRAVERSE SAILING. When the ship is obliged to sail on different courses, the crooked line or track which she describes is called a *Traverse,* and the method of finding a single course and distance which would have brought her to the same place, is termed *resolving a Traverse.*"

(Norie's Epitome. Riddle's Epitome.)

SAILING DIRECTIONS. Of the numerous works on this subject we may notice the following; *Sailing Directions for the Southern* and also *those for the Northern At-*

lantic Oceans, by John Purdy (Findlay's editions): *The Colombian Navigator, by John Purdy,* comprising directions for the West Indies as well as for the coast, thence to the Gulf of St Lawrence: *J. W. Norie's Sailing Directions for the Mediterranean:* and *Horsburgh's India Directory,* which contains directions for sailing to and from the East Indies, China, Australia, and the interjacent ports of Africa and South America.

SAILOR. The same as *Seaman.*

SALAMANDER. A piece of metal with a handle attached, which is heated for the purpose of firing guns. This is used in saluting, to enable the men to fire with the greater regularity.

SALINOMETER. A name given to a particular sort of *brine guage,* or apparatus (contrived by Mr J. Scott Russell, civil-engineer) for the purpose of indicating the density of brine in the boilers of marine steam-engines, so as to show when it is necessary to cleanse the engine—by blowing off, or by means of a brine-pump—of the deposit which salt water leaves in the boilers, and which tends to injure them, as well as to diminish the evaporative power. (*Practical Mechanic and Engineer's Magazine.*)

SALLY-PORT. A place exclusively set apart for men landing from the boats of ships of war.

SALOON. A name for the main cabin of a steamer or of a packet ship.

SALUTE. A mark of deference or homage accorded on various occasions, generally by firing a ship's guns, striking any of her upper sails, or lowering a flag. A royal salute, that is to say, the salute given to Her Majesty or any of the Royal Family, consists in firing twenty-one guns.

SALVAGE. The allowance or compensation made to any person or persons by whose assistance a ship and cargo, or any part thereof, have been "saved from impending peril, or recovered after actual loss."

The considerations to be brought into view in fixing the amount of a salvage reward, are said to be, 1st, The labour employed, the peril encountered, and the skill displayed by the salvors: 2d, The degree of danger from which the pro-

perty is rescued: 3d, The value of what is saved. (*Sir John Nicholl* in the case of the *Clifton*, 3 *Hagg. Ad. Rep.* 117.)

The wearing apparel of the master and seamen are excluded in estimating an allowance for salvage on a ship. (*Hildyard's edition of Park on Insurance*, p. 327.)

Salvage is a reward for property saved, not for unsuccessful exertions, however meritorious, (*The India Adm. Court, 30th April* 1842, *Dr Lushington*): and if goods be abandoned to those who save them, there can be no claim for salvage. (*Steven's Essay on Average*, p. 49.)

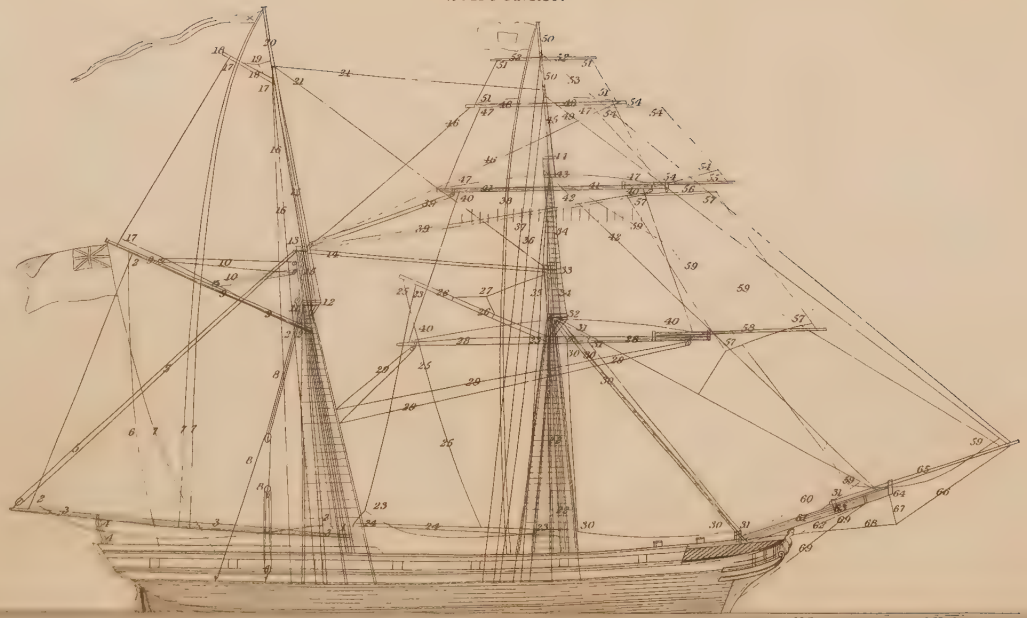
So long as the master of a vessel continues in command of her, no prior salvors have a right to prevent his calling in farther assistance, (*The Effect*, 3 *Hagg*, 165). Again, no person can entitle himself to a claim for salvage by taking possession of a wreck against the consent of those who are at hand employed by the master or owners to save and preserve it, (*Sutton* v. *Buck*, 2 *Taunt.*, 302). And if one set of salvors have possession of a vessel which they found abandoned at sea, no others are entitled to interfere and participate in the salvage, unless it appear that the former would have been unable to save it without their aid, or were not to be trusted, (*Hildyard's edition of Park*, 302).

Though salvors do not afterwards remain by the ship, this does not impair their title to remuneration for services rendered, (*Eleanora Charlotta*, 1 *Hagg.* 156. *Lord Stowell).*

As a general rule, it may be stated, that passengers are not entitled to remuneration for assistance rendered on board of a vessel. (*Bell's Commentaries. Branston, Wilson*, 2 *Hagg.* 3). But, if a passenger remain by the vessel when he has it in his power to depart, and, at the risk of his personal safety, assist her in distress, he may be entitled to remuneration for his service. (Various decisions quoted in *Lord Tenterden's Treatise*, page 212, above referred to). And where, in circumstances of great danger, a passenger took the command of the ship, and, by superior skill, succeeded in bringing her safely into port, he was held entitled to a liberal salvage reward, (*Newman* v. *Walter*, 3 *Bos. and Pull.*, 612). The crew are in no case entitled to claim as salvors, but are bound to do their duty in saving the wreck

PLATE IV.

SCHOONER.



NUMERICAL INDEX TO SCHOONER.

1 MAIN MAST.
2 Main Sail.
3 Main Boom.
4 Main Sheet (and M. S. Block).
5 Main Boom Topping Lift.
6 Vangs of Main Gaff.
7 Signal Halyards.
8 Runner and Tackle.
9 Main Gaff.
10 Main Peak Halyards.
11 Main Throat Halyards.
12 Main Cross-trees.
13 Main Cap.
14 Main Stay.
15 *Main Topmast.*
16 Maintopmast Backstays.
17 Gaff Topsail.
18 Gaff Topsail Gaff.
19 Gaff Topsail Halyards.
20 Pole of Main Topmast.
21 Maintopmast Stay.
22 FORE MAST.
23 Fore Spencer
24 Fore Spencer Boom.
25 Fore Spencer Vangs.
26 Fore Spencer Gaff.
27 Fore Peak Halyards (connected to Gaff by the *bridle*).
28 Fore Yard.
29 Fore Braces.
30 Fore Sail and Fore Stay.
31 Fore Staysail (and Halyards.)
32 Fore Cross-trees.
33 Fore Cap.
34 *Foretopmast.*
35 Foretopmast Backstays.
36 Foretopgallant Backstays.
37 Fore Royal Backstay.
38 Signal Halyards.
39 Foretopsail Braces.
40 Foretopsail.
41 Foretopsail Yard.
42 Foretopmast Stay.
43 Foretopmast Cross-trees.
44 Foretopmast Cap.
45 Foretopgallant Mast.
46 Foretopgallant Braces.
47 Foretopgallant Sail.
48 Foretopgallant Yard.
49 Foretopgallant Stay.
50 *Fore Royal Mast* and *Pole.*
51 Fore Royal.
52 Fore Royal Yard.
53 Fore Royal Stay.
54 Foretopgallant Studding Sail and Yard.
55 Foretopgallant Studding Sail Boom.
56 Foretopmast Studding Sail Yard.
57 Foretopmast Studding Sail.
58 Foretopmast Studding Sail Boom.
59 Jib, and Jib Stay.
60 Jib Sheet.
61 Bowsprit.
62 Bowsprit Shrouds.
63 Bowsprit Heart.
64 Bowsprit Cap.
65 Jib Boom.
66 Martingale Stay.
67 Martingale.
68 Martingale Back-ropes.
69 Bobstay.

BACKSTAYS.
16 Maintopmast Backstays.
35 Foretopmast Backstays.
36 Foretopgallant Backstays.
37 Fore Royal Backstays.
69 BOBSTAY.
BOOMS.
3 Main Boom.
24 Fore Spencer Boom
55 Foretopgallant studding sail Boom.
58 Foretopmast studding sail Boom.
65 Jib-boom.
61 BOWSPRIT.
64 BOWSPRIT CAP.
63 BOWSPRIT HEART.
62 BOWSPRIT SHROUDS.
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29 Fore Braces.
39 Foretopsail Braces.
46 Foretopgallant Braces.
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33 Fore Cap.
44 Foretopmast Cap.
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12 Main Cross-trees.
32 Fore Cross-trees.
43 Foretopmast Cross-trees.
GAFFS.
9 Main Gaff.
18 Gaff Topsail Gaff.
26 Fore Spencer Gaff.
HALYARDS.
7 & 38 Signal Halyards.
10 Main Peak Halyards.
11 Main Throat Halyards.
19 Gaff Topsail Halyards.
27 Fore Peak Halyards.
31 Forestaysail Halyards (and sail).
LIFT.
5 Main Boom Topping Lift.
67 MARTINGALE.
68 MARTINGALE BACK-ROPES.
66 MARTINGALE STAY.
MASTS.
1 Mainmast.
15 Maintopmast.
22 Foremast.
34 Foretopmast.
45 Foretopgallant Mast.
50 Fore Royal Mast and Pole.
POLES.
20 Of Maintopmast.
50 Of Fore Royal Mast (and mast itself).
8 RUNNER AND TACKLE.
SAILS.
2 Mainsail.
17 Gaff Topsail.
23 Fore Spencer.
30 Fore Sail (and stay).
31 Forestaysail (and halyards).
40 Foretopsail.
47 Foretopgallant Sail.
51 Fore Royal.
54 Foretopgallant Studding Sail (and yard).
57 Foretopmast Studding Sail.
59 Jib (and Jib Stay).
SHEETS.
4 Main Sheet and Block.
60 Jib-sheet.
STAYS.
14 Main Stay.
21 Maintopmast Stay.
30 Fore Stay (and sail).
42 Foretopmast Stay.
49 Foretopgallant Stay.
53 Fore Royal Stay.
59 Jib Stay (and Jib).
See Martingale.
VANGS.
6 Of Main Gaff.
25 Of Fore Spencer.
YARDS.
28 Fore Yard.
41 Foretopsail Yard.
48 Foretopgallant Yard.
52 Fore royal Yard.
54 Foretopgallant studding sail Yard.
56 Foretopmast studding sail Yard.

as sailors, and if they neglect or refuse to do so, they would forfeit all claim for wages.

SALVAGE, is a term also used to signify the thing itself which is saved: hence, a SALVAGE Loss implies a loss total in its nature with salvage—that is to say, where the insurer can be called on to pay a total loss, and to take the net proceeds of what is saved. See the article *Wreck*.

SAMSON'S POST. A large piece of timber with notches made in it, used in a vessel's hold for various purposes, particularly for fixing screws upon when stowing bale goods. In a ship of war, Samson's posts are put up diagonally between decks for getting a purchase upon.

SAND-STRAKE, in shipbuilding, a name sometimes given to the garboard-strake.

SAVE-ALL. See *Water-Sail*.

SCANT, expressed of the wind, implies that it is somewhat contrary to a vessel's course.

SCANTLING, in shipbuilding, implies the relative breadth and thickness of the timbers, planks, &c. For tables of scantlings reference may be made to *Lloyd's Register of British and Foreign Shipping*, and to *Hedderwick on Shipbuilding*.

SCARPH. To lap the tapered ends of two pieces of timber over each other, and join them firmly together, so that they may form an even surface. The joining is called *a scarph*. Scarphs are often secured by means of dowelling, tabling, or boxing. See *Hook-scarph* and *Shifting*.

'SCEND. [SEND].

SCHOONER. A small vessel with two masts, and no tops, the mainsail and foresail being each set on a gaff and boom. *A fore-and-aft schooner* has a cross-jack-yard, on which a square sail is set when occasion requires; all her other sails are fore-and-aft sails. *A top-sail schooner*, (which is the most common rig for schooners), carries a square fore-topsail, and frequently also a top-gallant sail and royal. There are some schooners with *three masts*; they likewise have no tops.

SCOPE. The *riding scope* of a vessel's cable, is the quantity by which she rides at anchor,

SCORE. A groove in a block, or dead eye.

SCRAPER. A small triangular iron instrument, having all its edges sharp, and a handle fitted to its centre; used to scrape off the dirty surface of the planks of a vessel's sides or decks, &c.

SCRAPE-STRAKES. See *Strake.*

SCREEN-BULKHEADS are partitions of thick woollen cloth, put up in the cabins of a ship of war when cleared for action; the wooden bulkheads being removed.

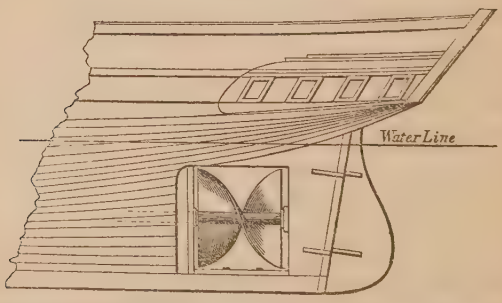
Hatchway Screens, or *Fire-screens,* are pieces of thick woollen cloth put round the hatchways of a ship of war in time of an engagement.

SCREW-GAMMONING. See *Gammoning.*

SCREW-PROPELLER, or Ship-Propeller. A contrivance for superseding the use of paddle-wheels as a motive power for steam-vessels. This machine was invented and patented by Mr F. P. Smith, in connection with whom a company, under the firm of "The Ship-Propelling Company," has since been established in London, for the prosecution of the invention.

It originally received the name of the *Archimedean Screw,* and was first introduced a few years ago in a vessel of about 150 tons burden, called the "Archimedes." A double-threaded screw of the description shewn in

Fig. 1.



was applied to this vessel; but its length being found to occupy too much of the dead-wood, the screw has been gradually reduced in length by Mr Smith, in the course of a

series of experiments, until it assumed the form shown in which was adopted by him for the screw of H.M. Steam-ship "Rattler." When intended specially for the purpose of towing, a greater surface is given. Of late, the screw-propeller has also been applied in a few instances as an auxiliary power for sailing vessels.

Fig. 2.

The difference between the movement, situation, and speed of the screw-propeller, and those of the paddle-wheel, necessarily causes a difference in the arrangement and application of the machinery by which they are respectively driven.

1*st*, The circular movement of the paddle-wheels is in the same direction as the line of the keel, but that of the screw is at right angles to it; and therefore the direction of the moving power of the screw, instead of being fore-and-aft, must be across the ship.

2*d*, In a vessel propelled by paddles, the centre line of the paddle-shaft requires to be considerably above the water-line, and lies athwartships; whereas the screw is inserted in a hole made in the dead-wood near the stern-post, with its centre so far below the water-line as to keep the whole of the screw completely submerged; hence, the shaft whereon the screw revolves must be placed below the water-line more than half the length of the diameter of the screw, and the shafting of the engine, instead of being nearly as high as the deck, must be proportionally lowered.

For these changes the side-lever engine is not at all adapted; but the common land beam-engine, slightly modified, and placed across the vessel, makes a good driving power for the screw; as well as the direct action engine, in which the motion is at once communicated from the piston-rod to the crank by means of the connecting-rod alone.

3*d*, When the amount of propelling surface is properly proportioned to the power of the engines and size of the ship (putting all other circumstances out of consideration), the vessel's speed depends on the quantity of space travelled over by the paddle floats in a given time, which is equal to

the number of feet in the circumference of the paddle-wheel multiplied by the number of revolutions it makes in that time—or, to the space gone through by the screw in a given time,—which is equal to the number of feet in the "*pitch*" (that is, in the distance one turn of the thread of the screw is from another) multiplied by the number of revolutions of the screw in that time. Now, to go through the same quantity of space as the paddles do in the same time, the screw requires to make a greater number of revolutions; for, the length of the pitch of a screw is not nearly equal to the circumference of a paddle-wheel in two vessels of the same size.

In order to transfer the power from the crank-shaft of the engine to the screw-shaft in such a manner as to give it the increased number of revolutions thus required, there have been as yet only two methods adopted; one by means of spur-wheels and pinions, the other by belts and pulleys: but there are great objections to both of those methods on board a ship. Where the spur gearing is used, the engine is placed nearly at the same part of the vessel as it is in a ship propelled by paddles, and the screw-shaft is extended in length along the vessel sufficiently far to bring the end of it immediately under the end of the crank-shaft: the latter, which is parallel with the shaft of the screw, has a large spur-wheel fixed upon its end, the teeth of which catch those of a pinion fixed upon the screw-shaft; there are as many times more teeth in the wheel than in the pinion as the number of revolutions of the screw-shaft must exceed those of the crank-shaft; and thus the required increase of velocity is communicated to the screw. Where belts are used, drum-pulleys with belts placed round them are fixed upon the shafts, and the large wheel or drum-pulley, which is fixed on the crank-shaft, is as many times greater in circumference than the small one, which is fixed upon the screw-shaft, as will give to the latter the increased number of revolutions that are required.

The screw-propeller may be considered as yet in its infancy, and there is no doubt that the plans for driving it must undergo great changes before it is brought to perfection.

SCROLE. See *Head.*

SCUD. To run right before the wind in a storm. The most approved sail for scudding with is a reefed foresail: if the sea be high, a close reefed maintopsail is a valuable auxiliary to it. The gale may be so violent as to render it dangerous to carry any sail at all, in which case the vessel is made to scud under bare poles. See *Dana's Seaman's Manual.*

Scud, is also a name given by seamen to the lowest clouds, when in squally or tempestuous weather, they are driven through the atmosphere with greater rapidity than the clouds which float above them.

SCULL. A short oar. To Scull, means to impel a boat by putting out an oar in the row-lock which is generally cut in the top of the stern, and forcing it alternately from side to side, reversing the blade each time, so as to give it a motion like that of a fish's tail.

SCUPPER. A leaden pipe let into a vessel's waterways and through her side, to carry off any water from the decks.

Annular Scupper. A particular kind of scupper, invented by Captain Henry Downes; "its peculiarity consists in having a broad copper ring fixed over the pipe flap, and a moveable concentric ring inserted," by which the scupper hole can be enlarged from two inches to three and a half inches diameter. (*United Service Magazine,* 1842.)

SCUTTLE. A square opening cut through a vessel's deck or through any of her hatches; it is furnished with a hatch, called a Scuttle-Hatch, for covering it when required.

Air-Scuttle. See *Ports.*

TO SCUTTLE *a vessel,* means to cut or bore holes in any part, in order to make her sink.

SCUTTLED-BUTT, or (as it is generally abbreviated) Scuttle-Butt. A cask with a square hole cut in its bilge, kept on deck to hold water for ready use.

SEA. A general term for the whole body of salt water on the terraqueous globe. See *Ocean, Head-sea,* and *Ship.*

A Sea Boat, or *a good sea boat*, implies any vessel that falls easily in the rolling and pitching motions, so as not to strain herself and endanger the masts and rigging.

A vessel is said to have Sea Room, when she is at such a distance from land, or from rocks, or shoals, as is thought sufficient for safety.

SEA-CRAFTS. See *Clamps*.

SEAMAN. An individual practically occupied in the navigating of ships.

Within the meaning, and for the purposes of the Merchant Seamen's Act, any person (apprentices excepted) employed to serve on board of any ship belonging to a British subject, is deemed to be a seaman, and the term "ship" is held to mean "every description of vessel," (whether decked or open), "navigating on any sea or channel, or waters outside the mouths of rivers, and also every vessel passing beyond the precincts of a port."

An *able*, or *able-bodied* seaman is one who understands and can assist in working the ship, or (as seamen themselves express it) who can "hand, reef, and steer," and who is also a good workman upon rigging, &c.; inferior hands go under the rating of *ordinary* seamen. Each man contracts, and is rated for the wages and duty of an able, or of an ordinary seaman, when he ships.

A British Seaman (according to the tenour of the Navigation Act, 3 and 4 Will. IV., c. 4), must be a subject of Her Majesty, as explained in section 16 of that statute; or, if a foreigner, must have served in the Royal Navy in time of war, for the space of three years. No vessel is admitted to be a British ship unless duly registered, and navigated by a master who is a British subject; and by a crew whereof three-fourths are British seamen, or otherwise by at least one British seaman for every twenty tons of the ship's burthen: but if employed in trading or fishing on the coasts of the United Kingdom or Channel Islands, she must be wholly navigated by British seamen. It is quoted by Mr Clement, in his Customs' Guide, as the opinion of the Attorney and Solicitor-General of England, (*Min. C. C.*

12*th Aug.* 1842), that "engineers, firemen, and coal-trimmers, on board steamers, are to be deemed part of the crew within the meaning of this act, but the steward, stewardess, and boy, are not to be so considered." By section eighteen of the statute, ships trading between places in America, may be navigated by British negroes, and ships trading between places eastward of the Cape of Good Hope, within the limits of the East India Company's Charter, may be navigated by Lascars, or other natives of countries within those limits.

In terms of the Act 4 and 5 Will. IV., c. 52, "for the relief of sick, maimed, and disabled seamen, and the widows and children of such as shall be killed, slain, or drowned in the Merchant Service," the master of every merchant vessel belonging to a British subject, and every such owner navigating his own vessel, is subjected to a payment at the rate of two shillings a month; and every seaman, pilot, or other individual employed on board of it, to a payment at the rate of one shilling per month, during the time he shall belong to such vessel. This the master is to retain out of any wages, or profits, arising due to the seaman or other person employed on board, and to pay it along with the amount due by himself, to the collector, or receiver of the fund, before being cleared inwards, at whatever port in the United Kingdom the vessel shall be reported, or shall discharge her cargo. The act does not extend to persons employed in fishing-boats on the coasts of the United Kingdom, and islands adjacent, nor to persons employed in boats, or vessels, trading only from place to place, within any river of the United Kingdom. If a seaman be hurt in the course of a voyage, he may receive relief out of this "Merchant Seamen's Fund," on producing the necessary certificate regarding such injury.

By the Act 7 and 8 Vict. c. 112, relating to merchant seamen, it is required that the master of every vessel must, before proceeding to sea, obtain from each British seaman his *register ticket*. In the case of any vessel proceeding to parts beyond the seas, it is also required that a written

AGREEMENT, in the form schedule (A) of appendix to the act, be entered into with every seaman before carrying him to sea, and any agreement so made, or a true copy thereof, and of every endorsement thereon, must be delivered to the collector or comptroller of customs at the ship's final port of destination in the United Kingdom, within twenty-four hours after her arrival; upon arrival, also, at any port out of this country, it must be deposited within forty-eight hours thereafter, if she remain so long—at a foreign port, with the consul—or at a colonial port, with the officers of customs,—a list of the apprentices with the dates of their indentures, &c., being noted at the foot of such agreement, which is to be returned to the master before the ship's departure. In the case of any vessel of the burden of eighty tons, or upwards, employed on the coast of the United Kingdom, or proceeding to any of the islands of Jersey, Guernsey, Alderney, Sark, or Man, or to the Continent, between the river Elbe inclusive, and Brest, an agreement in the form schedule (B) of appendix to the act, must be entered into; this last mentioned agreement cannot extend beyond six months, expiring on 30th June, or 31st December in each year, and all such agreements must be delivered half-yearly to the collector or comptroller of any port in the United Kingdom, within twenty-one days after each of these dates.

These agreements, which specify the capacity of the seaman, the wages and the quantity of provisions he is to receive, and the nature of the ship's intended voyage, or employment, must be properly dated, and be signed by the master, and by the seamen respectively, at the place where they shall be shipped; after being distinctly read over and explained to the seamen in presence of at least one witness to attest their several subscriptions. Before any seaman signs such agreement, the master should compare the number of his register ticket with the list of cancelled tickets, which we notice under the head, REGISTRY OF SEAMEN.

No such agreement can deprive a seaman of his lien on the ship, or of any other legal recourse which he has for recovery of wages; nor prevent him from entering the Royal

Navy; and no agreement inconsistent with the statute in question is held valid or binding on a seaman.

Absence without leave, desertion, or *refusal to perform any duty reasonably required of a seaman by the person in command of the ship,* subjects the seaman to forfeiture of his wages, and in some cases to imprisonment. The penalties for desertion are justly severe; the seaman guilty of this offence forfeits not only the clothes and effects he may leave on board, and his wages, but also (if abroad) the wages and emoluments arising due to him for his services in any other ship by which he may obtain a passage home, and he is liable to his former master for any excess of wages paid to a substitute.

(In "*The Law relating to Merchant Seamen,*" by Mr Symons, chief clerk of the Thames Police Court, it is observed, that in case of disobedience, or disorderly conduct, on the part of a seaman during the course of a voyage, it is lawful for the master to correct him in a reasonable manner, but that it behoves the master to be very careful in the exercise of this power, and not to make it a pretext for cruelty and oppression. "Except in cases requiring his immediate interposition, he should take the advice of the persons next below him in authority, as well to prevent the operation of passion in his own breast, as to secure witnesses to the propriety of his conduct," and *to the moderation of the punishment inflicted.* "A hasty or intemperate blow given by the master cannot be justified." "The law is too watchful over the safety of all to allow the slightest violence to be done to the person of any, except in self-defence, or for the maintenance of discipline, to ensure the safety of the ship and the lives of the persons on board." The 2d chapter of Mr Symons's Treatise ought to be well considered by every shipmaster).

At the time of his discharge, a seaman receives up his register ticket, and is entitled to a *certificate* from the master as to the period of his service, and the time and place of his discharge in the form schedule (E) of appendix to the act.

If the ship be employed in coasting, the seaman's *wages* are payable within two days after the termination of his

agreement, or at the time of his discharge, whichever shall first happen; if employed otherwise than coasting, they are payable within three days after delivery of the cargo, or within seven days after the seaman's discharge, whichever shall first happen; and in all cases he is entitled, at the time of his discharge, to be paid one-fourth of the balance due to him. If payment be, without sufficient cause, delayed beyond these respective periods, the seaman is entitled to recover as wages a penalty of two days pay "for each day, not exceeding ten days," during which the payment is so delayed. These rules do not apply to ships employed in the Southern Whale Fishery, or on voyages for which seamen are by their agreement wholly compensated by shares in the profits of the adventure. There are certain pressing cases in which, after three days from the expiry of the service, immediate payment of wages may be ordered by a Justice of the Peace, under a penalty of £5 for non-compliance. (Section 14 of the Act).

The payment of wages or of salvage to a seaman is valid, notwithstanding any bill of sale or assignment thereof, or any attachment issued from any court. Wages may be recovered summarily by complaint on oath before a justice of the peace, who may order payment of wages not exceeding £20, and of the costs of the complaint; and if such order be not obeyed within two days after its date, he may cause the amount to be levied on the goods and chattels of the party against whom it is issued, or on the tackle and apparel of the ship, or in some cases may imprison the party until payment be made. Except under certain circumstances (the insolvency of the shipowner and so on), no suit for wages not exceeding £20 can be instituted before an Admiralty or a Vice-admiralty Court: (Section 16 of Act).

In all cases of *wreck* or *loss of the ship*, every surviving seaman is entitled to his wages up to the period of the loss, provided he shall produce a certificate from the master or chief surviving officer to the effect that he had exerted himself to the utmost to save the ship, cargo, and stores.

The duty of the master towards his crew when the *ship is sold abroad*, the payment of wages to *seamen allowed to be*

left behind during a voyage (which latter step is placed under restrictions by sections 46, 47, and 48), and the disposal of wages or effects belonging to *seamen dying abroad*, are regulated by sect. 17, 49 and 31 of this statute.

It is also enacted that if any master or seaman be *hurt* in the service of the ship, he is to be provided with subsistence and medical aid gratis, and that the expense of bringing him home is also to be borne by the shipowner, without any deduction being made on such account from the master or seaman's wages.

A seaman is not allowed to insure his wages, but he may insure his clothes and other effects.

See *Crew, Consul, Master, Registry of Seamen, &c.*

SEAMANSHIP. The art of working a ship or performing her various evolutions at sea. On this subject, attention may be directed to *Darcy Lever's "Young Sea Officer's Sheet Anchor," Glascock's "Naval Service or Officer's Manual," Martello's "Naval Officer's Guide," "Seamanship both in Theory and Practice,"* and *Dana's "Seaman's Manual."*

SEAWORTHY. A term implying that a vessel is in every respect fit for her intended voyage; not only that the hull and furniture of the ship are sufficient, but that the captain and crew are competent, and that she is provided with all that is required for the purposes of a safe and careful navigation.

Under a charter-party, as well as under a policy of insurance, there is an implied agreement or warranty that the ship be seaworthy at the commencement of the voyage: if she be not so, the owner is responsible for the consequences. See *Insurance (Premium of).*

If, within a day or two after sailing upon her voyage, a ship become leaky and founder, or is obliged to return to port without any storm or adequate cause, it has been held that she is to be considered as having been unseaworthy at the time she sailed, and that it lies with the owner to prove that the inability arose from causes subsequent thereto. (See *Holt's Shipping and Navigation Laws. Park on Insurance*). But the implied warranty of seaworthiness has re-

ference to her condition only at the commencement of the voyage, *Hollingworth* v. *Brodrick*, 7 E. & A. 40), except where something must subsequently be done—for example, the taking a pilot at any place where the practice of navigation or local regulations require it, in which case the master is bound to use all practicable means, consistent with the safety of the vessel, to obtain one. If the ship become unseaworthy in the course of any voyage, and this fact come to the knowledge of the owner or master, it seems right that he should use all reasonable means within his power to have her put in proper condition or repair: this duty appears to be especially imperative where the ship is insured under a time policy.

SEAMS. The joinings of the edges of planks in a vessel's bottom, sides, or decks. See *Caulk* and *Pay*.

SEARCHER. See *Customs*.

SEARCHER or GUN-SEARCHER. An iron instrument with several sharp pointed prongs and a wooden handle: this is used for working up and down in the bore of a gun to discover if it be honeycombed, a little wax being for such purpose put on each prong.

SEASONING, in shipbuilding, a term applied to the keeping a vessel standing a certain time, after she is completely framed and dubbed out for planking, which, says the author of the *Shipwright's Vade Mecum*, should never be less than six months, when circumstances will permit. Mr Blackburn, in his *Treatise on Shipbuilding*, suggests that where the ship in frame would be exposed to the effects of every kind of weather, it would be better to put the timbers, beams, &c., when worked to their proper dimensions, under a shed in a suitable situation. All ships of war are built under cover. It is, however, deserving of consideration, whether rain be not a useful agent in assisting to clear away the natural sap from the wood.

Seasoned plank or *timber* is "such as has been cut down and sawn out one season at least, particularly when thoroughly dry and not liable to shrink." (*Shipwright's Vade Mecum*).

Saturation with oil is found to be a good preservative for wood. See *Kiln* and *Dry-rot*.

SEATING, in shipbuilding, that part *of the floor* which fays on the dead-wood, or on the keel: that part *of a transom* which fays against the stern-post.

SECTION, in shipbuilding, a representation or draught of a portion of the ship cut by a plane in any particular direction. If it cut the vessel lengthwise, it is called a *Longitudinal Section;* if at right angles to the keel, a *Transverse Section. A Midship Section,* implies a transverse section in the middle of the vessel. *A Load-water Section,* is a horizontal section at the load-water line.

SEIZE. To fasten ropes, or different parts of one rope, together by turns of small stuff: for example, the fastening of the ends of shrouds after being turned in round the dead-eyes.

The small line, spunyarn or marline, used for such purposes is called *Seizing.*

SELVAGEE. A skein of rope-yarns or spunyarn marled together; used as a strop in hoisting anything.

SEND or 'SCEND. A vessel is said to *send,* when she pitches her head into the trough of the sea.

SENNIT or SINNET. "A braid formed by plaiting rope-yarns or spunyarn together." (*Dana's Seaman's Manual).*

SERVE. *To serve a rope* is to wind small stuff, as, rope-yarn, spunyarn, or the like, round it to keep it from being chafed. The stuff so wound is called *Service;* it is put on against the lay of the rope, and is hove taut by means of a *serving-board* or *serving-mallet.* The former, which is a flattened piece of hard wood, with a handle formed on it, is used for small ropes. See *Mallet* (*Serving*).

See also the article *Vent.*

SET. *To set up rigging,* is to increase its tension by means of tackles. *To set sail,* see the article *Sail.*

SETTING, in shipbuilding, implies the operation of making the planks of a vessel fay close *to the timbers* and also *to each other:* the former is generally done by driving wedges between the planks, and a *wrain-staff* inserted through a ring-bolt—the latter, by driving wedges between the planks and a bolt called a *Sett-bolt*—driven into an auger hole made in the timber.

THE SET *of a current*, means its direction.

SETTLE. To lower, or to be depressed. Thus, a vessel is said to *settle* when she sinks deeper in the water after springing a leak.

SEXTANT (Hadley's). "An instrument constructed on the same principles as the quadrant; but, as it is used chiefly to measure the *angular* distance" between the moon and the sun or a star, in order to determine the longitude, its arc is "extended to 120 degrees for the purpose of measuring their distance when greater than 90 degrees; it is also provided with some appendages not commonly annexed to a quadrant," to enable the observation to be taken with greater accuracy; the frame is generally made of brass or other hard metal. (*Norie's Epitome*).

The quadrant reads off miles, but the sextant is subdivided more minutely so as to read off parts of a mile.

SHACKLE. An open link of iron, or species of clamp, with a bolt for securing it. Shackles are used (among other similar purposes) for coupling the parts of a chain cable at various lengths, in order that they may be readily disconnected when required: pins of hard wood are preferable to iron for forelocking shackle bolts, because iron pins are apt to get fixed in with rust, and, in the event of having to slip from an anchor, may on this account cause the loss of the whole cable.

See *Span-shackle.*

SHAKE. *To shake a vessel in the wind*, means to bring her head so near the wind, when close-hauled, as to shiver the sails.

SHAKES. The staves of large casks taken asunder and bound up closely together; which is sometimes done (particularly with casks for the use of whale fishing vessels) in order to save stowage room.

See also *Rents.*

SHAKEN or SHAKEY. The condition of plank or timber which has shakes or rents in it, and will not bear fastening or caulking.

SHAKINGS. A name given to "small fragments of

ropeyarn or of cordage, bits of oakum, old lanyards, &c., in short, to any kind of refuse arising out of the wear and tear of ropes."

SHALLOW. Not deep. A piece of water which has little depth at any time.

SHANK *of an anchor:* See description of *Anchor.*

SHANK-PAINTER. A short piece of rope or chain, or both, used to secure the shank of an anchor to the ship's bow after being fished, and to ease it down again before dropping anchor.

SHEATHING. Thin boards, or sheets of copper or yellow-metal, nailed over the bottom of a vessel.

Wood-sheathing is used most generally for covering a vessel's bottom that has been partially wormed.

See *Doubling* and *Copper.*

SHEAVE. A wheel (or, as it is called in mechanics, a pully) either of wood or metal, inserted into a hole called the *Sheave-hole,* either in a block, or in a yard-arm, mast, or boom, &c.

SHEEP-SHANK. A kind of hitch or bend used to shorten a rope temporarily. For minute explanations of various kinds of hitches, &c., we have already referred to *Dana's Seaman's Manual,* in which a plate of them is given.

TO SHEER ALONGSIDE, means to steer a vessel so as to bring her gently alongside of another or of any object. To SHEER OFF, is to steer her so as to keep clear of or move off from it. See the articles *Anchor* and *Break sheer.*

SHEER. The longitudinal curve downwards of a vessel's topsides or upper works. It is sometimes called a *Spring.* See *Ram-line.*

SHEER-DRAUGHT, or *Sheer-plan.* The same as elevation. See *Shipbuilding.*

SHEER-MOULD. See *Ram-line.*

SHEER-RAILS. A name for the mouldings round a vessel's topsides.

SHEER-STRAKE. See *Strake.*

SHEERS. Two rough masts or spars set up like two legs of a triangle, and lashed together at their upper end, from

which tackles are suspended: guys also are attached to it, in order to keep the sheers upright, and to steady them. They are used, in shipbuilding, for hoisting the stem, stern-post, frames, &c.; or, generally, for the purpose of taking out and putting in the lower masts of any vessel.

SHEER-HULK. See *Hulk.*

SHEET *of a course*: the rope or chain by which its clue is hauled aft: there is a tack and a sheet to each clue of a course. The sheets of any *upper square sail* are in like manner made fast to the clues, and rove through a sheave-hole or block at each of the yard-arms, in order to extend the sail to the yard. The sheet of a *fore and aft mainsail,* or of a *spanker, trysail,* or *spencer,* is attached to the boom. That of a *storm trysail,* or of any *fore and aft head-sail* is made fast to the after lower corner of the sail. (Plates III. and IV).

TO SHEET HOME, means to haul home a sheet. See the article *Home.*

SHEET-ANCHOR. See *Anchor.*

SHELF-PIECES, or SHELVES. Strakes of plank worked round the interior of a vessel edgeways to the ship's sides, for the purpose of receiving and securing the ends of the beams, as the "upper-deck shelf," the "gun-deck shelf," &c. They are also called STRINGERS, under which head a more full description is given. (Plate II. fig. 6).

SHELL (Shrapnell). See *Shot.*

SHIFT THE HELM. See *Helm.*

SHIFTING, or SHIFT, in shipbuilding, the overlaunching of one plank or piece of timber upon another, so that the butts or scarphs of each may be sufficiently far apart to afford strength and stability to the vessel. The proper regulation of the shiftings is laid down with great accuracy in *Lloyd's Register of British and Foreign Shipping.*

SHIFTING-BOARDS. One or more wooden partitions put up fore-and-aft in a vessel's hold, and firmly supported on each side by pillars, or "stanchions," of wood, for the purpose of preventing the shifting of a cargo, such as grain, when stowed in bulk.

SHIFTING-CENTRE. See *Metacentre.*

TO SHIP, means to put any thing on board, or to enter on board of a vessel: also, to insert any thing in its proper place; in this last sense, *to unship* is the opposite term.

A vessel is said to *ship a sea,* when a wave breaks over her deck.

SHIP. A name applied, in common language, to any vessel intended for the purposes of navigation, especially to such as are of considerable burden. In a more confined sense, it is applied to a vessel having three masts with tops and yards to each. See *Steam-ship.*

SHIP OF THE LINE. See *Line.*

SHIP'S HUSBAND. See *Husband.*

SHIP'S PAPERS. Certain writings or documents descriptive of a vessel, her owners, cargo, &c,—as, the certificate of registry, manifest, agreement with seamen, muster-roll, bills of lading, and so on. Also, those documents required to be on board a neutral ship in order to vindicate her title to that character. *(Maunders's Scientific and Literary Treasury.* See *Marshall on Insurance).*

SHIP-BREAKER. A person whose occupation is to take vessels to pieces.

SHIP-BROKER. See *Broker.*

SHIP-BUILDING. The art of constructing vessels for navigation. An individual so employed is called a SHIP-BUILDER, or SHIPWRIGHT.

The principal PLANS used in shipbuilding are: 1. *The Sheer-Draught, Sheer-Plan,* or *Elevation,* which is a vertical and longitudinal view of the ship representing her outboard works from the wales upwards, and also the keel, stem, and stern-post, with a sectional view of the centres of the frames, laid off at their proper distances upon the keel, and marked from the dead-flat, in numerical figures towards the stern-post, and in letters of the alphabet towards the stem. 2. *The Half-breadth Plans,* or *Floor Plans,* which are sections upon a longitudinal plane, whereon are represented the water-lines and the ribband-lines. 3. *The Body Plan,* which

is a representation of vertical transverse sections before, at, and abaft the dead-flat.

Of the MODELS used in shipbuilding, we may notice the following: *A Bulkshead-Model,* is one formed by vertical pieces of board representing half frames, which are fastened to a board corresponding with the centre line of the vessel: *A Key-Model,* or *Water-line Model,* is formed by pieces of board laid on each other horizontally: these boards, being all shaped from the lines on the paper, when put together and fairly adjusted, present the true form of the ship.

The LINES employed in shipbuilding are as follows: *The Bearding-Line,* which is described under the article "bearding." *Buttock-Lines,* and *Bow-Lines,* longitudinal curves at the buttock and bow representing the ship's body cut in vertical section. *The Cutting-down Line,* a curve in the sheer-draught corresponding to the upper surface of the throats of the floors amidships, and to the under side of the keelson. *Diagonal Lines* or *Ribband-Lines,* cutting the body-plan diagonally from the timbers to the middle line; they regulate the position of the ribbands, and, when laid down on the floor-plan, give points (called surmarks) at their intersection of the frames for the bevellings of the timbers. *The Level-Line,* a horizontal line struck between the surmarks of a floor-timber, upon which line a large square is placed, with a plummet, in order to set the floor-timber, when laid upon the keel, to a proper level. *The Middle-Line,* or *Centre-Line,* a line run from the stem to the stern-post, dividing the ship into two equal parts. *The Rising-Line,* an elliptical line drawn on the plan of Elevation to determine the sweep of the floor-heads throughout the ship's length, and thus ascertain the shape of the bottom as to its being full or sharp. *The Top-timber Line,* or *top-breadth Line,* a curve describing the height of the top-timbers, which gives the sheer of the vessel. See also the article *Water-Lines.*

SWEEPS, are the arcs of circles used in the body-plan to describe the form of the timbers.

The figure of the ship abstractedly considered is divided into two principal parts: the FORE-BODY, or that part be-

fore the midship-frame, as seen from a-head; and the AFTER-BODY, or that part abaft the midship frame as seen from astern. *The Fore* and *the After Cant-bodies* are those parts inclined towards the stem and towards the stern-post, which form the shape forward and aft. THE SQUARE-BODY, or MIDSHIP-BODY, is that part between the cant-bodies, in other words *amidships*, where the timbers are perpendicular to the keel.

The breadth of a vessel is usually distinguished into EXTREME BREADTH, measured from the outside of the wales on each side: MAIN BREADTH, measured from the outside of the black strakes: and TOP-TIMBER BREADTH, or TOP-BREADTH, from the outside of the plank-sheer. *The upper Height of Breadth* is marked by a line where the topsides begin to incline inwards: *the lower Height of Breadth* by a line where the bottom begins to arch inwards. See *Straight of Breadth.*

(Hedderwick on Shipbuilding. Creuze's Treatise on Naval Architecture.)

Mr Blackburn, in his *Treatise on the Science of Shipbuilding*, very properly notices, that, in constructing ships, care ought to be taken not to place together those kinds of timber which are known to disagree in their nature, and to destroy each other: he farther remarks, that the oak of Northern Europe and that of North America prove extremely pernicious to our native oak, and that a decayed piece of timber placed in contact with a sound piece, will hasten the destruction of the latter. When it happens to be indispensably necessary to place any such kinds of timber together, a piece of hair felt may be introduced between them, in order to prevent these injurious effects.

SHIP-MASTER. See *Master.*

SHIP-OWNER. A person who has a right of property in a ship or vessel, or any share therein. Every owner, or part-owner, of a British ship must be a subject of Great Britain, and he must hold at least one sixty-fourth share in the ship. There cannot be more than thirty-two registered owners of one vessel at one time, excepting in the case of

heirs, creditors, or certain others holding their title from one of such registered owners, and in the case of joint-stock companies holding property in shipping.

The property of a vessel, or shares thereof, can be transferred to a purchaser only by a regular "vendition" or bill of sale in writing, containing a recital of the certificate of registry, or of its principal contents, and by entry in the registry book, and indorsement on the certificate of registry.

The interests of part-owners are quite distinct, so that one cannot dispose of the share of another, or effect any insurance for him, without special authority. See *Husband (Ship's)*.

The majority in value of the part-owners may employ the vessel in opposition to the will of the minority; but the latter may protect themselves by giving formal intimation of their dissent, in which case they will neither be liable in any share of the expenses, nor entitled to any of the profits of the voyage: it seems to follow, also, that the dissenting owners would be protected from any damage or loss occurring to the ship in the course of such employment.

(*Holt—Tenterden.* See also *Lees's "Law of Shipping and Insurance.*")

SHIP-PROPELLER. See *Screw-Propeller.*

SHIP-SHAPE. A cant phrase used to imply *according to the fashion of a ship,* or, *in a seaman-like manner.*

SHIPPER. An individual who sends goods on board of a vessel, to be forwarded by her.

SHIPPING. Ships in general. A number of vessels.

SHIPWRECK. The destruction of a vessel by being cast ashore, or driven upon rocks, &c. In such a case, also, both the vessel and the mariners are said to be *shipwrecked.*

SHIPWRIGHT. A shipbuilder: a person occupied in the building and repairing of vessels. The workmen so employed under a master-shipbuilder, are called either *shipwrights* or *carpenters.* The individual who has the chief superintendence in the building and repairing of Her Majesty's ships, at any of the Royal Dockyards, is styled the *Master-Shipwright.*

SHIVER *a sail:* to shake the wind out of it and thus make it collapse, either by hauling on the braces or by bringing the vessel's head up to the wind.

SHOAL. The same as shallow: but more particularly applicable to a sand-bank which dries at low water.

A vessel is said to shoal her water, when she comes from a greater into a lesser depth of water.

SHOE *of an anchor:* a flat piece of hard wood, hollowed out on one side, suspended by a lanyard, with the hand, in order to prevent the pea of an anchor from ripping the bows, while hoisting the anchor after being catted or while lowering it down.

SHOE *of the Forefoot,* in shipbuilding, an iron plate fixed on the lower part of the gripe and the fore end of the keel, outside, to strengthen them and prevent chafing.

SHOLES (in some places pronounced *Showles*). Pieces of plank placed under the soles of standards, or under the heels of shores, in docks or on slips where there are no ground-ways, in order to enable them to sustain the weight required, without sinking. (*Shipwright's Vade Mecum*).

SHOLES, or SHOLE-PIECES, are also pieces of plank fixed under any thing by way of protection, such as a piece put on the lower end of a rudder, that, in the event of the ship's striking the ground, it may be knocked off without injury to the rudder.

SHORES. Pieces of timber used, in shipbuilding, as temporary supports and for other purposes. Hence, *to shore* means to prop up with shores.

DOG-SHORES, are shores used to prevent a vessel from starting while the keel-blocks are in the act of being taken out, preparatory to launching.

SKEG-SHORES. See *Skeg.*

SPUR-SHORES, or *Spurs.* A name for shores placed in a horizontal position, or set up diagonally. Spur-shores, placed diagonally, are used for setting straight any piece of timber, such as a keel-piece, which happens to have a crook upon it; one end of the shore being fixed in the ground, with a piece of plank (sometimes called a *slip*) at its butt

for wedging upon, and the other end set up against the article that is intended to be straightened. Shores of this description are set in the same way against a plank which is bolted and forms a flange to the groundways, for better security in launching a vessel.

SHOT. A general name for all sorts of balls or bullets used for fire-arms. The cast-iron balls fitted to the size of the bore of a heavy gun or cannon are termed *Round-shot*. Two of these connected together by a chain form what is called *Chain-shot;* used at sea to shoot down masts and yards, and to cut the rigging of vessels. *Grape-shot,* consists of a number of balls placed in the form of a bunch of grapes round an upright piece of iron fixed in the middle of an iron plate fitting the bore of a gun, the shot being marled strongly over with canvass. *Case-shot,* or *Canister-shot,* consists of smaller balls in a cylindrical case or canister; it is used when fighting at close quarters.

The Shrapnell-Shell, or *Spherical Case-shot* (invented by General Shrapnell), consists of a light cast-iron hollow ball, filled with musket shot, and sufficiently thin to allow of its bursting with a small quantity of powder, which is shaken into the interstices; it has a fuse-hole, into which a fusee is inserted to explode the shell during its flight, and after the shell thus bursts, the balls retain nearly the same direction (merely diverging laterally), which would not be the case if burst with much powder. "This kind of shot is more effective, at a greater range, than grape or canister shot."

SHOT-RACKS. Wooden frames fixed at convenient places in a ship of war to contain shot.

Iron rods, hollowed out so as to hold the shot, are now very generally used instead of these shot-racks.

SHOULDER-OF-MUTTON SAIL. A kind of triangular sail, so called from its peculiarity of form, and used chiefly to set on a boat's mast. The sail is commonly bent to a yard which hoists perpendicularly to the mast, and is attached to it by two cranes: it is hauled up and down on the mast by means of halyards.

The upper corner of the shoulder-of-mutton sail is some-

times converted into a gaff-topsail, which can be lowered snugly behind the other part of the sail, when required, to diminish the quantity of sail aloft.

SHROUDS. A set of ropes reaching from the mast-heads to a vessel's channels, set up for the support of the masts. They are distinguished into main, fore, and mizen shrouds,—maintopmast shrouds,—maintopgallant shrouds, &c., according to the masts which they support. See *Rat-lines.*

See also *Bowsprit-shrouds,* and *Futtock-shrouds.*

SHROUD-TRUCKS. See *Trucks.*

SICK-BAY. A place set apart in a ship for invalids or wounded men.

SIDE-BOYS, in a ship of war, are boys employed to take charge of the man-ropes, and attend on any officers or other individuals coming on board from or going off in a boat.

SIDE-LEVERS. See description of *Steam-Engine,* Sect. 21.

SIDE-RODS. See description of *Steam-Engine,* Sect. 23, 24, and 25.

SIDEREAL DAY. See *Day.*

SIDING DIMENSION, in shipbuilding, implies the breadth of a piece of timber; *Moulding Dimension,* its depth or thickness. The timber is said to be *sided* or *moulded* so many inches.

SIGNS OF THE ZODIAC. See *Zodiac.*

SIGNALS *at sea,* are signs made for the purpose chiefly of exchanging communications between ships at a distance from each other. This may be done by hoisting flags, or firing guns, &c. With regard to the first of these methods, the code of signals in most common use in the merchant service is that of Captain Marryat. See also the article *Telegraph.*

SILLS OF PORTS. See *Port-Sills.*

SINNET. [SENNIT].

SIRMARKS. [SURMARKS]. See *Ribband-Lines.*

SISTER-KEELSON. See *Keelson.*

SKEEDS. [SKIDS].

SKEET. A piece of wood or iron with a groove in it, used for throwing water over the planks of a ship's sides. This is done in warm climates in order to prevent their being rent by the heat of the sun.

SKEG. A name given to the after part of a vessel's keel.

SKEG-SHORES. Pieces of plank put up endways under the skeg of a heavy ship, to steady her after part a little at the moment of launching. They are made to turn on a hinge, and fixed so as to fall readily when the ship starts.

SKIDS or SKEEDS. Pieces of plank formed to fit a vessel's topside, and extending from the wales to the top of the side. They are used to preserve the side from being injured by weighty bodies when hoisted into or lowered out of the ship. Some old ships, such as whalers, &c., have them *fixed* to the sides.

Boat Skids are similar portable pieces used in like manner to prevent chafing, &c., when a boat is hoisted or lowered.

The name of SKIDS, is also given to pieces of plank put under a vessel's bottom, for the purpose of launching her off when she has been driven ashore.

SKID-BEAMS. See *Spar-deck.*

SKIFF. A popular name for any small boat. See also the article *Boat.*

SKIN. That part of a sail which is outside and covers the rest of the sail when it is furled. Also, familiarly, the sides of a vessel's hold; thus, an article is said to be "stowed next the skin." *(Dana's Seaman's Manual).*

SKINNING. A term used for *planking* a vessel.

SKIPPER. A familiar name for the master of a merchant vessel.

SKYSAIL. A light sail, in a square rigged vessel, next above the royal. It is set either on the pole of the royal mast, or (when this mast has no pole) on a spar, called a *sliding gunter mast,* which rests upon the top-gallant mast head, and extends upwards, forming a pole above the royal mast. Either of these poles gets the name of the *skysail pole.*

SKY-SCRAPER. A name sometimes given to a skysail when it is triangular. *(Dana's Seaman's Manual).*

SLAB-LINE. A rope used to haul up the slack of a course, in order to prevent it from shaking, or being split in the act of hauling up the sail.

SLACK *of a rope;* any part of it which hangs down loose.

SLACK IN STAYS. See *Stay.*

SLACK WATER. See *Tide.*

SLEEPERS, or ENGINE-BEARERS, in shipbuilding, pieces of timber placed between the keelson or keelson-riders in a steam ship, and the boilers of the steam-engine, to form a proper seat for the boilers and machinery. The term SLEEPERS, is also sometimes applied to knees at the ends of the wing-transom for strengthening the connection between the stern-frame and the after body of a vessel. See *Pointers.*

SLICES, in shipbuilding, tapered pieces of wood driven between the bilgeways, &c., preparatory to launching a vessel. *A slice,* or *slice bar,* also means a bar of iron with a sharp end, used to strip off sheathing, ceiling, &c.

SLIDE-VALVES, with their appendages. See description of *Steam-Engine,* Sects. 3, 4, 5, and 31.

SLIDE-VALVE CASING. See description of *Steam-Engine,* Sect. 2.

SLIDING-BAULKS. See *Bilgeways.*

SLIDING-GUNTER-MAST. See *Skysail.*

SLIDING-KEELS, in shipbuilding, pieces of wood or iron made to lower down through the main keel so as to protrude below it when required. These are serviceable in diminishing the tendency of any vessel to roll; and they serve to prevent a sailing vessel from falling to leeward when close-hauled. If a vessel be fitted with three sliding keels, the fore keel will serve to bring her about when the after keel is hove up, and the after keel will make her wear quickly when the fore keel is up. See *Charnock's History of Marine Architecture.*

SLIDING-PLANKS. See *Bilgeways.*

SLING. To place any thing in slings in order to hoist or lower it.

SLINGS. That part of a yard encircled by the SLING-HOOP, which suspends it from the mast, or by which it is hoisted and lowered. A lower yard is hung by chains, called *slings*, attached to the sling-hoop and mast head. An upper yard is hoisted and lowered by its *tye*, which is attached to the sling-hoop.

The name of SLINGS, is also given to a large rope, or chain, fitted so as to go round, or furnished with hooks to attach to any article which is to be hoisted or lowered; as *butt-slings, boat-slings,* &c.

SLIP. The sloping foundation laid for the purpose of building a ship upon and launching her.

There are also slips on which vessels may be drawn up for receiving repairs. The most important of these is *Mr Morton's Patent Slip:* it consists of a frame having a centre piece for the ship's keel to rest upon, and two side pieces apart from the centre, the whole connected together near the lower end by cross beams with knees; there are also arms at regular distances from each other, to each of which is attached a sliding block of wood for hauling in beneath the ship's bottom, in order to steady her, when she is properly grounded on the centre piece; this framework gets the name of the *cradle;* it moves upon truck wheels with flanges to guide them, and is drawn up and let down upon a cast iron railway, by means of a chain, or a succession of iron bars, connecting it with a steam engine, or with any purchase. Without entering into a more minute description of Mr Morton's invention, we shall notice merely that, on the very superior Patent Slip erected by him at Dundee, whereon ships of 1000 tons burden can be hauled up, the present superintendent of it has introduced a method of steadying vessels properly upon the cradle, which proves to be attended with much advantage: four large iron bars, the lower ends whereof traverse upon an iron bolt, which serves as a pivot, and passes through an iron clamp fixed, where it may be required, to the cradle, and with ropes attached to their upper ends, are placed, two a little abaft the ship's forefoot, and two a little before her heel, lying lengthways on

the top of the frame till she is hauled to a proper berth, in which they serve to keep her. They are then raised one after another by means of the ropes till their heads appear above water, the two after ones on each side of the stern-post, and the two fore ones on each side of the stem; there are also ropes crossing the bows, attached to the fore arms of the cradle, and two other ropes, crossing the stern, attached to two arms opposite to the ship's quarters. These ropes may be lead to a windlass, or winch, in order to be hove taut. When the whole is fairly adjusted, the other ropes usually attached to dolphins, or to the shore, (excepting one head rope made fast to the bars), are cast off, and the cradle and ship are drawn up.

SLIP THE CABLE. To let it all run out, instead of weighing the anchor. See the article *Chain*.

SLIP-ROPE. A rope bent to any thing in such a manner that it may be slipped when required.

SLIPPERY HITCH. A hitch made so unskilfully that it will not hold.

SLIVER, in shipbuilding, any thin piece of wood used as a filling.

SLOOP. A vessel with one mast, commonly rigged wholly with fore-and-aft sails: namely, a boom mainsail, foresail, gaff-topsail, jib, and jib-topsail. Some sloops have no gaff-topsail, but a square topsail, and topgallant sail.

Sloops are also furnished with a square sail to set on a yard, called the *cross-jack-yard*, or *square-sail-yard*, when going free, or running before the wind.

SLOOP OF WAR. Any ship of war commanded by a Commander in the Royal Navy. If a steam-vessel, it is termed a *steam sloop of war*.

SLOPS. A name for clothes and other furnishings for the outfit of seamen. In a ship of war, these are supplied by the purser, and deductions made on such account from the men's wages.

SLUDGE-HOLES. See description of *Steam Engine*, Sect. 40.

SLUE. To turn any thing round or over.

SMACK. A large kind of sloop having a gaff-topsail

and a running bowsprit. The smacks originally built as packets to ply between London and Leith and other ports, were formed with a clean bottom with a view to good sailing qualities, carrying very heavy sails, and therefore requiring a large complement of men: most of these have now been converted into schooners which can be worked with fewer hands.

Sloops employed as fishing vessels, having in the hold a well wherein to preserve the fish alive, get the name of *fishing smacks.*

SMART-TICKET. A certificate granted by the surgeon, and passed by the commanding officer of a ship of war in favour of any person who has been wounded or hurt in the service, in order that he may receive a single gratuity, or a pension from Greenwich Hospital.

SMOKE-SAIL. A small sail put up for the purpose of preventing the smoke of the galley from going aft to the quarter-deck, when the ship is riding head-to-wind.

SMUGGLING, with reference to sea affairs, means defrauding the public revenue by importing or exporting goods without paying the customs' duties exigible upon them; an offence to which heavy penalties or fines, and other punishments, are attached.

SNAKE. To pass small stuff across a seizing at the outer turns by way of finish. To attach lengths of rope between two stays or backstays.

SNAPE, or FLINCH, in shipbuilding, to bevel the end of any thing so as to fay upon an inclined surface.

SNIFTING-VALVE, or TAIL-VALVE. See description of *Steam-Engine*, Sect. 13.

SNOTTER. A rope going over a yard-arm with an eye forming a becket to bend a tripping-line to, in sending down topgallant and royal yards: mostly used in ships of war.

SNOW. See *Brig.*

SNUBBING. Checking or easing off a little of a ship's cable or hawser, in order to prevent a sudden jerk when bringing the vessel up, or on other occasions.

SNY. In shipbuilding, a plank is said to have *sny*, when

its edge has an upward curve. *Hang*, is a term applied in the same way when it has a downward curve.

SOLSTITIAL POINTS. See *Ecliptic*.

SOUND. To ascertain the depth of water by a lead and line or otherwise. See *Lead*, and *Well*, and also the article *Strike*.

The depths of water so ascertained at sea or in a river are termed SOUNDINGS. *To strike soundings*, is to find bottom with the deep-sea-lead on coming in from sea.

Massey's Patent Sounding-Machine is an instrument which ascertains the depth of water, and registers it by means of an index connected with a fly or rotator in the centre of the instrument. *Ericcson's Lead*, or *Patent Sounding Instrument*, is adapted for the same purpose: a description of it may be seen in the fifth volume of the *Nautical Magazine*.

SOUNDING ROD. A slight bar of iron marked with a scale of feet and inches, used to ascertain the depth of water that may happen to be in a vessel's hold.

SOUND-DUES. A toll or tribute levied by the King of Denmark on all merchant vessels passing the strait called the SOUND, which connects the North Sea with the Baltic. There are not only duties on the cargoes of such ships, but also light-dues and other exactions, levied: and all vessels passing the Sound (whether laden or in ballast) must, on this account, come to anchor at Elsineur for clearance.

SOUTHING. See *Northing*.

SPALING, or BAULKING, in shipbuilding, means keeping the frames to their proper breadths by *cross-spales* or *baulks*, which should so remain till some of the deck beam knees are bolted.

SPAN. A rope made fast at both ends, for a purchase to be hooked to its bight.

Also, a double rope with thimbles seized betwixt the two parts, stretched across the rigging as a fair-leader for ropes.

A span of rigging, implies the length of shrouds from the dead-eyes on one side, over the mast-head, to the dead-eyes on the other side of the ship.

SPAN-SHACKLE. A large bolt with a triangular ring attached to it for lashing anchors or spars thereto.

SPANISH-BURTON. See *Burton.*

SPANISH-WINDLASS. A wooden roller having a rope wound about it, through the bight of which rope an iron bolt is inserted as a lever for heaving it round. This is used in setting up rigging, and for similar purposes.

SPANKER, or DRIVER. The aftermost sail of a ship or barque. It is a fore and aft sail setting on the mizen mast with a boom and gaff.

See the article *Trysail.*

SPANNER (or LEVER) of parallel motion. See description of *Steam-Engine*, Sect. 21.

SPARS. The general term for all masts, yards, booms, gaffs, &c.

Rough spars, are trees in their unfinished state when cut down, suitable for making masts, yards, &c.

SPAR-DECK, properly signifies a temporary deck laid in any part of a vessel; and the beams whereon it rests get the name of *skid-beams.* "Thus, a spar deck may be laid in the hold just above the keelson, when endeavouring to float a stranded ship. The term *spar-deck* is now also applied to a ship's upper deck—that is, to the quarter-deck, gangways, and forecastle" of a deep-waisted vessel.

SPEARS (Pump). See description of *Pump.*

SPECK-BLOCKS.
SPECK-FALLS.
SPECKSIONEER.
} See the article *Flensing.*

SPELL. "The common term for a portion of time given to any work. *To spell*, is to relieve another person at his work." (*Dana's Seaman's Manual.*)

SPENCER. A fore and aft sail, set with a gaff, and sometimes also with a boom, hoisting from a small mast called a *spencer-mast*, just abaft the fore or main mast of a ship or barque. Brigs and schooners have often a spencer abaft the foremast.

A description of a contrivance to serve the purpose of a cork-jacket, called after the name of its inventor, *a spencer*, is

given by Dr Burney in his edition of *Falconer's Marine Dictionary.*

SPIDER-HOOP. The hoop going round a mast to secure the shackles to which the futtock-shrouds are attached.

The iron trusses of lower yards are often connected to the spider-hoops.

SPIKES, or SPIKE-NAILS. See *Nails.*

SPILES. Small wooden pins used as plugs for nail holes; for instance, where sheathing has been taken off a ship's bottom.

SPILINGS, in shipbuilding, the dimensions of the curve or sny of a plank's edge. They are commonly measured by means of a rule-staff fastened for this purpose on the ship's timbers.

SPILL *a Sail:* to take the action of the wind off it, either for safety or facility of management.

SPILLING-LINES. Ropes used in bad weather to spill a sail, in order that it may be furled with safety. They are used principally for the lower sails.

SPINDLE. A pin or bar on which any thing revolves; as, the iron pin whereon a vane or a capstan turns.

SPIRKETTING, in a ship of war, the strakes of ceiling plank which work up to the sills of the ports of the several decks; as the *gun-deck spirketting, the upper-deck spirketting*, and so on.

In merchant vessels, when there is a strake of ceiling wrought between the upper deck and the plank-sheer, it is called the *spirketting*, or *quick-work.*

SPLICE. To join two ropes together, by opening and interweaving their strands: or, to interweave the strands of the end of a rope between those of the bight.

The joining so effected is termed *a splice.* Explanations of various kinds of splices, with illustrative sketches, are given in *Dana' Seaman's Manual.*

SPLIT. The state of a sail rent by the violence of the wind, or the act of its being so rent.

SPLITTING OUT BLOCKS. A process sometimes resorted to when it is necessary to remove the blocks on which

a vessel rests on a slip or in a dock, from beneath any part of her keel or bottom, and the pressure is so great *that they cannot be driven out without being split.*

SPONGE *for a gun:* a cylindrical piece of wood covered with lambskin or coarse wool, used for cleaning out, or (as it is termed) "sponging" the gun after it has been fired. The sponge for a carronade is screwed on the end of a staff, to the other end of which there is generally fixed a wooden *rammer,* for driving the charge home when loading the piece: for a long gun, the sponge and rammer are fixed each on a separate staff.

SPONSINGS, or SPONCINGS, in a steam-ship, the curve of the timbers and planking towards the outer part of the wing before and abaft each of the paddle-boxes. See the article *Wing.*

SPOON-DRIFT. Water swept from the tops of the waves by the violence of the wind in a tempest, and driven along before it over the surface of the sea. (*Dana*).

SPRAY. "An occasional sprinkling dashed from the top of a wave by the wind or by its striking an object." (*Dana's Seaman's Manual*).

SPRING. A rope put out at either side of a vessel (generally abaft) and made fast to her cable, while at anchor, for the purpose of changing her position, or of steadying, or casting her, as may be required. Springs are used on other occasions; for example, in mooring a vessel at a quay, &c.

A spar is said to be sprung, when it is cracked or split, without the part being altogether broken off; and the crack is called *a spring.*

SPRING *a leak.* To begin to leak.

SPRING *the Luff.* See *To Luff.*

SPRING-STAY. A smaller stay used to assist the regular one.

SPRING-TIDE. See *Tide.*

SPRIT. A pole used for spreading the sails of some boats. Its lower end rests in a becket or snotter which encircles the lower part of the mast, and the other end spreads

and raises the outer upper corner of the sail, crossing the sail diagonally. A sail so rigged is called a *sprit-sail.*

A SPRIT, or SPUR, in a sheer-hulk is a spar for keeping the sheers out to the required distance in order to preserve the head of them plumb with the centre of the ship when taking out or putting in masts.

SPRITSAIL-YARD. A yard slung with a parrel across the bowsprit, or secured in this position to the knight-heads. It is used to spread the guys of the jib-boom and flying-jib-boom. There was formerly a sail bent to it, called the sprit-sail. See *Whiskers.*

SPUNYARN. A cord formed by twisting two or more rope-yarns together. See *Winch.*

SPURS or SPUR-SHORES. See *Shores,* and also *Sprit.*

SQUALL. A violent gust of wind. The following description of squalls is extracted from the introduction to *Horsburgh's India Directory:*

THE ARCHED SQUALL, is one which is frequently experienced: it is "usually distinguished by the arched form of the clouds near the horizon, but sometimes it assumes the appearance of a dense black cloud, particularly when highly charged with rain or with electric matter." From the time of its being first seen above the horizon its motion is sometimes so rapid as scarcely to allow a ship to reduce the necessary sail before the wind reaches her, which happens when the cloud has approached the zenith. As a general rule, it may be observed that these squalls are seldom so furious when they are followed as when they are preceded by rain.

THE DESCENDING SQUALL, issues from clouds which are formed in the lower parts of the atmosphere near the observer; hence it is not so easily anticipated as the former, because clouds thus formed generally produce showers and successive squalls.

THE WHITE SQUALL, "is not often experienced; but it sometimes happens near, or within the tropics, especially in the vicinity of mountainous land. This squall generally blows with great violence for a short time; and as it is liable to happen when the weather is clear without any appearance

in the atmosphere to indicate its approach, it is consequently very dangerous. The only mark that accompanies it is the white broken water on the surface of the sea which is torn up by the force of the wind."

Some farther interesting particulars are noticed by Mr Horsburgh on this subject.

SQUARE. *To square a vessel's yards,* is to lay them at right angles to her keel by trimming with the braces, at the same time bringing them horizontal by means of the lifts.

A vessel is said to have square yards, when they are unusually long. *A sail is said to be very square in the head,* when it is broad at the head.

SQUARE FRAMES, in shipbuilding, those frames which are square with the line of the keel, having no bevelling upon them.

SQUARE-RIGGED. Having square sails.

SQUARE-SAIL. A quadrilateral (or four-cornered) sail set across a vessel, having its head extended by a yard.

SQUARE-TUCK. See *Tuck.*

SQUARING-OFF, in shipbuilding, signifies plugging off and otherwise tightening the treenails, and chinsing all rents and shakes in the planks, after the seams have been caulked.

STAGES or Staging. Any platforms or scaffolding on which shipwrights perform their work, whether in building or repairing vessels: they are also termed *Shifting-stages.* The stages erected to convey timber, &c., on board, are called *Stage-gangways* or *Brows.*

STANCHIONS or Rough-tree-timbers. Upright pieces of timber placed at intervals along the side of a vessel to support the bulwarks and rail. (Plate II. Fig. 6). There are, in like manner, *Stanchions* to support the gallows and fife-rail. The stanchions for the hammock-nettings, awning, &c. are made of iron. See also *Quarter-stanchions.*

Stanchions, or (perhaps more properly) *Pillars,* also mean the square or turned pieces of timber, &c., erected perpendicularly under the middle of the beams as supports,

Those which are under the hold-beams of a merchant vessel, and rest on the top of the keelson or keelson-rider, are called *Hold-stanchions;* those which are immediately above these and between the hold-beams and upper-deck beams are called the *'tween deck stanchions.* They are sometimes made of iron.

STAND BY! An order to be prepared.

STAND OFF AND ON. Alternately to recede from and approach the land while sailing by the wind.

STANDING *Backstays, Jib, Lifts,* and *Rigging.* See the articles *Backstays, Jib,* &c., respectively.

STANDING PART *of a Rope.* See *Tackle.*

STANDARDS. Upright posts erected round a shipbuilding or repairing slip for the purpose of supporting stages, &c., on which to perform the work. The most efficient kind of standard is that which is split with a saw right down the middle, wooden nuts being bolted between the halves to keep them asunder; bolts are driven through the standard at convenient heights to support the ends of the *Bearers,* that is, the pieces of plank placed on edge for the stages to rest upon.

STANDARD-KNEES, or DECK-STANDARD-KNEES, in shipbuilding, iron knees having two tails, the one tail going on the bottom of a deck beam, the other on the top of a hold beam, while the middle part is bolted to the ship's side. (Plate II. Fig. 6.) These, as well as double-tailed fore and aft knees, are also called *Staple-knees,* or *Staple-lodging knees.*

A knee fayed vertically beneath a *hold-beam,* with one arm bolted on the lower side of the beam, is termed a *hanging-standard-knee.*

STANTIONS. [STANCHIONS.]

STAPLES. Crooked pieces of iron with their points made sharp so that they may be driven into any thing; they are used for various purposes, as for securing a vessel's false keel to the main keel; when applied to this purpose in a coppered vessel, they are made either of mixed metal or of copper.

STAPLE-KNEES, or STAPLE-LODGING-KNEES. See *Standard-knees.*

STARBOARD, or STARBOARD-SIDE. The right hand side of a vessel, looking forward. See *Helm.*

STARBOWLINES. A cant name used by sailors for the men in the starboard watch. *Larbowlines* is in like manner applied to those in the larboard (or "port") watch.

START *an Anchor:* to make it lose its hold of the ground. *Start a cask;* to open it. *Start a tack,* or *a sheet;* to slack it off a little. See also *Butt* and *Harpoon.*

STATION-BILL. A list of the appointed stations of a ship's company when working her.

STAY. To tack a vessel: to go about: or to bring the ship's head up to the wind in order to put her about.

A vessel in the act of tacking is said to be *in stays,* or to be *hove in stays:* if she work slowly in tacking, she is said *to be slack in stays:* and if her head will not come round, she is said *to miss stays.*

STAY. A large rope used to support a mast, and leading from its head down to some other mast or spar, or to some part of the ship. Those which lead forward are called *fore and aft stays;* and those which lead down to the vessel's sides *backstays.* (Plates III. and IV.) See also *Jackstays.*

A mast is said to be *stayed forward,* or to *rake aft,* according as it inclines forward or aft.

FUNNEL-STAYS. See *Funnel.*

STAY-BARS, or STAY-RODS, for framing of marine engine. See description of *Steam-Engine,* Sect. 34.

STAYSAIL. A sail which hoists upon a stay: as, the *main staysail,* main *topmast,* and main *topgallant staysails,* &c.

STAY-TACKLE. A tackle suspended (generally by a pendant) from a vessel's fore or main stay, for hoisting in and out boats, or moving other heavy bodies.

STEADY! An order to the steersman, while under way, to keep the ship's head as it is.

STEALER, STEALING-STRAKE, or, perhaps, more properly *Stowing-strake*, in shipbuilding, a name given to the foremost or aftermost plank in a strake which is not run all the way to the stem or stern, but is tapered off and butts against a notch or *joggle* in another plank. This method of working the plank, when the end next the stem or stern has to be wrought very narrow, is adopted for the purpose of avoiding the sny occasioned by a full bow or quarter. See *Jugle*.

STEAM-BOAT. The same as *Steam-Ship*.

STEAM-CHEST. See description of *Steam-Engine*, Sect. 37.

STEAM-ENGINE (MARINE), or THE MARINE ENGINE. The name given to steam-engines which are used to propel vessels, whether on the ocean or on rivers. Steam-vessels, in this country, generally use *condensing* engines; and, although there are various plans of constructing these, yet the principle of the engine is the same in all; they have all the same main acting parts, though not put together, or worked in the selfsame manner.

The kind of engine in most general use is that in which the motion is communicated by the intervention of *side-levers*, (L in Plate I.): it is mainly with a view to get rid of these levers which take up too much of the length of the ship, that so many different plans of construction have been tried; but the length of this form of engine, and its weight, are the only disadvantages attending it, for the parts are better balanced and work more steadily than in any other kind of engine.

That which we are about to describe is the SIDE LEVER CONDENSING ENGINE with short D slide-valves. In plate I., fig. 3 shews the engine erected in its place in the ship; fig. 1 is a plan of the engine, and fig. 2 a longitudinal section; all of them shewing the engine at half stroke, that is, with its side-levers level.

STEAM CYLINDER.

1. THE CYLINDER (C, Plates I. and II.), being the chief part of the engine, (for it is within this that the power of

the steam is applied to give motion to the machinery), ranks first in describing the parts. It is simply a cylindrical tube of metal bored to the diameter required. The relative power of the engine is proportionate to the size of this diameter.

The cylinder is steam tight at the foot, and firmly bolted to the engine bottom, and closed above by the *cylinder cover*, which is a lid of metal with a hole in the centre for the piston-rod working through; this hole is kept steam tight by a "stuffing box," on the top of the cylinder cover, filled with hemp kept well soaked with tallow, and the cover of this box, being screwed firmly on the hemp, presses it together and against the piston-rod, and thus prevents steam from passing through.

2. Slide-Valve Casing. (B. Plates I. and II). On one side of the cylinder is this casing which covers the *nosles*, (or *steam-ports*), and confines the *slide-valves*. The steam which is to be introduced into the cylinder enters the casing from the boiler by the steam-pipe *p*. Within the casing, at the top and bottom of the cylinder, are the two *nosle-faces*, which are square plates of brass raised upon the cylinder, one round each of the steam-ports, for the valve-plates to slide upon. These Steam-Ports (the upper port marked *o*, and the lower port *u*, in fig. 2) are oblong passages leading from the nosle-faces to the inside of the cylinder: by them the steam enters and returns above and below the piston.

3. Slide-Valves. (D, sections in Plates I. and II). The use of these is to change the admission of the steam into and its eduction from the cylinder by the upper and lower steam-ports alternately. The valves shewn here are what are called the short D slide-valves, each resembling a half cylinder with a plate across its diameter, which thus gives it the form of the letter D, whence they derive their name. They slide with the flat part or diameter of the D upon the nosle-faces.

Directly facing the steam-ports there are recesses in the casing, called packing-boxes, filled with hemp-packing and

tallow, which is pressed against the back or cylindrical part of the slide-valves by means of screws, and as there is no passage through the valves, these packings form steam tight partitions separating the top and botton of the casing from the middle part; they also serve to press the valves against the nosle-faces.

The steam-pipe *p* from the boiler enters the casing at the middle part, and the eduction of the steam takes place from the top and bottom of the casing by passages leading directly into the condenser. With reference to the following explanation, *it must be particularly kept in mind, that in the engine which is here shewn, the middle of the casing alone communicates with the boiler, and its two ends both communicate with the condenser.*

When the valves are at the centre of their stroke, the valve-faces, which are somewhat broader than the steam-ports, completely cover these ports. The distance between the valve-faces is such that, when the valves are at the top of their stroke, the top valve-face must have passed above its port *o*, leaving it open to the centre of the casing, and thus letting steam in to the top of the cylinder; and the under valve-face must also have passed above its port *u*, leaving it open to the foot of the casing, and thus letting the steam from the bottom of the cylinder into the condenser. Figs. 1 and 2 in Plate II. shew the valve-faces at their two extreme positions: fig. 1 shews the lower port open to the steam and the upper one to the condenser; and fig. 2 shews the bottom open to the condenser and the top to the steam.

See section 31 of this description.

4. *Slide-Valve Rod*, (*f*, sections in Plates I. and II). The slide-valves are connected by this rod, jointed to both, and passing out through the casing cover, the opening in which is kept steam-tight, in the same manner as that in the cylinder cover for the piston rod, by a stuffing-box.

5. The weight of the slide-valves is balanced by the *counter-balance weight*, (*i* in figs. 1 and 2 Plate I.), which is suspended from the end of a *lever*, *j*; fixed upon the *weigh-shaft*, or *wiper-shaft*, *g*, on that side which is op-

posite to the valves. This forms an equipoise to the valves, and takes their weight off the work of the engine. The journals or bearings on the ends of the wiper-shaft lie in bushes, which are fixed upon the frame of the engine.

6. *Cylinder Escape-Valves,* (*a* in figs. 1 and 2, Plate I). At each end of the cylinder is a small conical valve, called an *escape-valve,* for the purpose of letting off any *water* that may collect above or below the piston, and which, owing to the very incompressible nature of water, would do serious injury unless allowed an outlet. Each of these valves is kept on its seat by a spring of a pressure exceeding that of the steam, but not sufficient to resist the water when forced by the piston.

7. *Throttle-Valve,* (not seen in the Plates). This is a valve in the steam pipe, used for the purpose of shutting off and letting on the steam, and for regulating the quantity; it is moved by a small lever at the side of the steam-pipe.

8. The Piston (P in fig. 2, Plate I.), is a body of metal fitting the bore of the cylinder, and made to slide easily upwards and downwards within it, in order by its reciprocating movement to communicate motion to the engine. Steam is kept from passing between the circumferences of the piston and cylinder by means of cast-iron rings encircling the circumference of the piston; the rings are cut into several portions, and pressed against the cylinder by springs placed behind each of the parts; there are generally two or more rings, the cutting of one coming under a solid part of another. They form an excellent packing, which improves after being in use for a short time.

9. *The Piston-Rod* (R in fig. 2, Plate I.), is firmly fixed in the piston by a key driven through both. This rod passes through the cylinder cover, as already noticed, and is connected to the side-levers by the cross-head T and side-rods *l,* Plate I.

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10. Having described the different parts in connection with the cylinder, let us now see how they act. Suppose the throttle-valve to be opened, for admission of steam to the

cylinder, the piston to be at the top of the cylinder, and the slide-valve at the top of the casing; both valve-faces being above their ports, the upper port (*o* in fig. 2, Plate II.), is open to the steam in the middle of the casing, while the lower port *u* is open to the foot of the casing, and consequently communicates with the condenser; the steam then rushing in from above presses down the piston. When the piston reaches the bottom of the cylinder, the slide-valves are lowered to the position shewn in fig. 1, Plate II, and both valve-faces being now below their ports, the lower port *u* is in its turn open to the steam in the body of the casing, while the upper port *o* is open to the top of the casing, and thus communicates with the condenser; consequently, the steam from the body of the casing is admitted below the piston and raises it again, the steam that is above passing at the same time to the condenser. When the piston reaches the top, the valves are again reversed, and so on alternately lowering and raising the piston.

CONDENSER.

11. The Condenser is a very important part of the low-pressure engine, as it is within it that the steam, after having done its duty in raising or depressing the piston, is instantly reduced to water of about a seventeen-thousandth part of its bulk, thus leaving the rest of the space void.

In the marine engine it is a large chamber (V in Plate I.) standing close to the cylinder, and about the centre of the engine. A pipe *z'* called the *injection-pipe*, with a cock fitted thereto, is fixed in its interior, and communicates with the water on the outside of the ship; from this pipe a shower of water constantly plays into the condenser while the engine is working; the water is injected in such a manner that the steam entering from the cylinder must mix with it, and is thereby instantly condensed, by which means a vacuum is made in that end of the cylinder which is for the time in communication with the condenser, thus taking away all obstruction from one side of the piston, and giving no hindrance to the pressure of steam upon the other side.

Numerous plans have been tried to condense by surface cooling instead of by injection; this is a desirable improvement for several reasons—it would require a smaller air-pump, and would give a considerable saving in the wear of boilers, besides allowing them to generate steam more speedily, for the same water could be returned to the boiler, and the only additional water required would be a supply to make up for leakage. Among the many plans which have been tried for condensation by surface cooling, *Hall's Condenser* is especially to be noticed; it is composed of a number of tubes of a very small bore, which are immersed in flowing water, and are thus kept always cool; hence, the steam on entering them is condensed on the cold sides. This has been found to answer very well, but is not equal to condensation by jet.

The condenser is generally cast in a piece with the *engine bottom* K, so as to make a firm substantial body, and the main centre gudgeon for the side-levers working upon is fixed through the condenser at the centre of the engines.

12. *Blow-through valve* (not shewn in Plates). This valve is for the purpose of admitting steam into the condenser, in order to clear it of air and water before starting the engine. It accordingly opens a communication between the middle part of the slide-valve casing and the condenser, both the steam-ports *o* and *u* being at the same time shut.

13. *Tail-valve* (*k* in fig. 2, Plate I.) The *tail-valve*, or *snifting-valve*, is at the opposite side of the air-pump from the condenser, and is connected with the latter by a pipe under the air-pump; it opens when pressed by steam entering the condenser by the blow-through valve, but the weight of the atmosphere is sufficient to keep it shut so long as there is a vacuum in the condenser.

When the blow-through valve is opened, the steam from the casing (the throttle-valve being at the same time open, and the injection-cock shut) rushes in and fills the condenser, and by its elastic force drives out through the tail-valve any gases and water which may have accumulated in the condenser.

AIR PUMP.

The use of this pump is to remove the water and gases accumulating in the condenser while the engine is at work.

14. The Air-Pump (A in plate I.) consists of a metal *barrel* or cylinder wherein a "*bucket*" or open piston Z is worked from top to bottom by means of the *pump-rod* G with its *cross-head* Q, by which the rod is moved up and down. It is provided with certain valves which we shall describe in succession.

15. *The Foot-Valve* S is a flat plate of metal filling up the passage between the air-pump and condenser. It turns upon a hinge at the top, and when pressed from the condenser, opens towards the air-pump, so as to allow water to flow through, but, when pressed from the pump, falls shut and prevents all passage.

16. *The Bucket-Valve* W is a round valve which opens upwards when pressed by water in the air-pump beneath it, but when such pressure is withdrawn, falls shut by its own weight, so that no water can return which has once passed through.

17. *The Discharge-Valve* E′ is of the same construction as the bucket-valve, and opens in the same way; it covers the top of the barrel, opening when pressed from below, and when not so pressed falling shut, and thus preventing all passage of water back again.

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18. Now suppose the bucket Z to be at the foot of the air-pump: when the engine begins to move it upwards by means of the pump-rod G, if there be any water above the bucket-valve W it will be lifted along with the valve, and this water pressing against the discharge-valve E will raise it, and entering the hot well H flow through the discharge pipe *g* into the sea. When the bucket rises, it will leave behind it a vacuum, causing the water and gases accumulated in the condenser to press open the foot-valve S, and to enter at the foot of the air-pump till the balance of pressure is restored, when the foot-valve will close from its own weight. When the bucket again begins to descend from

the top of the barrel, the upward pressure on the discharge-valve E′ will cease, and the valve will therefore fall by its own weight, and by that of the water and atmosphere above it; as the bucket descends it therefore leaves a void behind it, and the pressure of the bucket upon the water and gases below it will cause them to raise the valve W and pass above the bucket till it reaches the foot of the air-pump, when the ascent will commence as before.

By this means the air and water are drawn out of the condenser, and discharged at the top of the air-pump.

The air-pump is closed at the top by a cover of much the same form as the cylinder cover, and is bolted on to the engine bottom by a flange near the foot of the pump. The air-pump is either made of brass, or lined with that metal, to prevent corrosion from the salt water, which has a very injurious effect on cast-iron. All the valves exposed to the action of salt water are for the same reason also made of brass.

The cylinder stands at one end of the side-levers, and the air-pump near the other end, between the condenser and connecting-rod N, so that when the piston is at the top of its stroke, the air-pump bucket is at the bottom of its stroke, and so on alternately.

19. Hot-Well (H. in fig. 2, Plate I.) As already adverted to, this forms part of the discharge passage from the air-pump into the sea, and it is intended as a reservoir whence to feed the boiler with the warm water received out of the condenser, part of which is for that purpose drawn off from the hot-well by means of the Feed-Pump *r*, worked by two side-rods attached to one of the side-levers. When there is a sufficiency of water in the boiler the feed-pump is still kept working, but the water is returned by another pipe into the discharge passage.

The gases which enter the hot-well from the air-pump ascend into the Air-Cone *a c*, and escape through a pipe at the top of it.

20. For the purpose of saving fuel, especially in long

voyages, the steam is made to work expansively. To effect this, the steam is, by means of the EXPANSION VALVE (not shown in the Plates), shut off in its passage to the slide-valves, when the piston has travelled a certain distance in the cylinder, which is regulated by the engineer adjusting that valve so as to shut off the steam at any part of the stroke that his experience finds to be suitable. When the steam is thus cut off, the quantity which has already entered the cylinder sends the piston the remaining distance by its inherent expansive force, whereby a great part of the elasticity of the steam is made use of that would otherwise be lost.

The parts which have been described are those which have to do with the immediate action of the steam. We shall now explain the mechanical arrangements for transmitting the reciprocating movement of the piston to the rotative motion of the paddle-shaft, and the method in which the valves and pumps, &c., are worked.

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21. SIDE-LEVER (L in Plate I). Of these there are two, one on each side of the cylinder, alongside the engine, resembling the beam of the ordinary land engine. They work upon a centre gudgeon, which is a large rod of malleable iron fixed through the condenser in the very centre of the engine. A pin or centre is fixed at each end of both levers, one at the cylinder end, to which the side-rods *l* are connected, and one at the crank end, to which the connecting-rod N is strapped. Both ends of the levers are forked, and the straps of the side-rods and the cross-tail X are connected to the pins between the branches. There are also several studs along the centre line of the levers to which the pump-rods and the *parallel-bar* (*d* in Fig 2) are connected.

In order to reconcile the curved sweep which the ends of the side-levers describe with the perpendicular movement of the piston-rod by means of which they are driven, a "*parallel motion*" is formed between the rods *d* and *l* and the side-levers and the rod *c*, which, by the intervention of a lever *e* causes the *radius bar of parallel motion c* (in Fig. 2).

to guide the side-rods *l* in such a manner that their upper points may move in connection with the cross-head T in a direct line up and down. The lever *e* is called the *Spanner* or *Lever of Parallel Motion: b* is the *Parallel Motion Shaft.*

22. *Cylinder Cross-Head* (T, in Plate I). On the top of the piston-rod is the cross-head, stretching out athwart the cylinder. The bearings on the end of it, from which the cylinder side-rods hang, are directly over the bearings on the ends of the side-levers.

23. *Cylinder Side-Rods* (*l*, Figs. 1 and 3, Plate I). These rods hang from each end of the cross-head, one on each side of the cylinder, and they are connected to the pins of the side-levers below; thus forming links between the cross-head and side-levers, and causing the whole to move simultaneously.

24. *The Air-Pump* has a *cross-head* (Q, in Figs. 1 and 2, Plate I) and *side-rods* (*m*, in Fig. 1), similar to those of the cylinder, and connected to the side-levers in the same manner. Its cross-head is kept moving in a direct line by two *guide-rods* (4 in Fig. 2).

25. *The Feed-Pump* (*r*, in Plate I), is also worked by *side-rods*, but connected only to one of the side-levers, the side-rods hanging one on each side of it.

26. *The Bilge-Pumps* (*s*, in Figs. 1 and 3, Plate I), which are pumps so placed as to clear the ship of bilge-water, are each worked by a single link off one of the levers. Each engine has two bilge-pumps: in iron vessels the pipes connected with these pumps are laid through the water-tight bulk-heads, right fore-and-aft, so that they may clear the whole ship.

27. *Connecting-Rod* (N, in Fig. 2, Plate I). This rod serves to connect the side-levers and crank together. The foot of it is fixed into the cross-tail X, and the other end is strapped on to the crank pin.

28. *Cross-Tail* (X in Figs. 2 and 3. Plate I). The cross-tail is of the same form as the cylinder cross-head: it has iron straps catching the pins in the ends of the side-levers.

29. CRANK (U, Figs. 1 and 2, Plate I) and CRANK-SHAFT Y. When there are two engines, as is generally the case in sea-going vessels, the crank shaft is in three pieces; the *intermediate shaft* (Y 2, in Fig. 1), common to both engines; and the two PADDLE-SHAFTS Y, one to each engine, on which the paddles are fixed: when the crank-pins are in their places, all these move as firmly as if they were one piece.

The Crank is a bend or knee on the shafting, which, being pushed up on one side and pulled down on the other, moves the shafts round with a circular motion. It is composed of two pieces, being two arms or slabs of iron, one on each shaft.

THE CRANK-PIN (x, in Fig. 1, Plate I), goes through both arms of the crank at their extremities: to this pin the connecting-rod is attached.

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30. In the manner now described, all the working parts are connected together. When the piston-rod moves up, the side-rods must accordingly go up along with it, as well as those ends of the side-levers to which they are attached: this will depress the other ends of the side-levers to which the connecting-rod is attached, and the connecting-rod will bring down the crank till the piston arrives at the top of the cylinder, at which time, the steam being reversed, the piston begins to descend; consequently, the side-rods and the cylinder ends of the side-levers must descend along with it, and the other ends of the side-levers with the connecting-rod will rise, taking the crank up on the opposite side from that on which it went down, till the piston arrives at the foot of the cylinder, when, the steam being again reversed, the crank is carried round again.

The air-pump being towards that end of the side-lever which is farthest from the cylinder, its bucket takes an opposite movement from that of the piston: so, when the steam-piston is moving up, the air-pump bucket is going down.

31. The slide-valves are moved by the ECCENTRIC, which is shewn in Fig. 3, Plate II. E, is a side view of the eccentric, and S shows the hoop within which it plays.

The eccentric, as is shewn here, is a wheel placed upon the crank-shaft with its centre not at the same point, but to one side of the axis of the shaft; 1 being the axis of the shaft, and 2 the centre of the eccentric; so that when the shaft revolves upon its centre 1, the centre 2 of the eccentric describes a circle round 1. If the distance that 2 is placed from 1 be half the length which the slide-valves are required to travel, then the diameter of the circle round 1 will be the whole length of travel: See explanatory diagram, Fig. 4.

In order, then, to communicate motion to the slide-valves, the hoop S, in Figs. 1, 2, and 3, Plate II. with a rod *v* branching off one side of it, is placed on the circumference of the eccentric, within which hoop the eccentric is allowed to turn smoothly; the other end of the rod *v* catches the end of the gab-lever *m*, which is fixed on the weigh-shaft, and moves simultaneously with it, as does also the slide-valve lever *h*, which is fixed on the same shaft; this lever *h* is connected with the valve-rod *f* by a jointed strap which prevents the upper end of the rod from being moved out of the direct line in the short distance it has to travel up and down. In the diagram (Fig. 4) the same letters are used to indicate the levers and rods as in the Figs. I. and II. The full lines shew the eccentric at its extreme outward position, the eccentric rod *v* catching the gab-lever *m* at the point *a*. When the paddle shaft makes half a revolution, it will carry the centre of the eccentric from 2 to 3, and put the eccentric into the position shewn by the dotted circle; the rod *v* being thus pushed out will move the lever *m* from *a* to *a'*, consequently the lever *h* will be carried from *b* to *b'*, and the extremity of the valve-rod *f* moved from *c* to *c'* which (if these two levers be of equal length) will be the same distance as the centre of the eccentric moved from 2 to 3. If the paddle-shaft complete the full revolution, the eccentric, with the rod and levers, will be carried from the position indicated by the dotted lines back to their original position. Figs. 1 and 2, Plate II.,

shew the eccentric connected with the slide-valves at their two extreme positions. Fig. 1 shews the valves full down, and Fig. 2 shews them full up: U points out the positions of the crank at the same times.

32. The eccentric has a notch, or *gab* as it is called, fitting a pin in the *gab-lever, m.* By lifting the end of the eccentric rod off this pin in the gab-lever, the connection between the engine and slide-valves is broken, and the valves can then be worked by hand, by means of a series of levers fitted to them for this purpose.

The valves open the ports, both for the admission and eduction of steam, a little before the end of the stroke of the piston, and thus the steam, entering just before the piston comes to the end of its stroke, serves as a cushion, and gives the piston an easy turn on its next stroke; to effect this, the eccentric is set so as to give its strokes a little before the crank.

The eccentric is loose on the crank-shaft, and has a catch or projection upon it, with a corresponding projection on the shaft; the catch has two faces, one suiting the direction of the valves when the engine is going forward, and the other when it is backing, so that the same eccentric serves to drive the engine either way.

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33. The most critical position of the crank is when it is either at the top or bottom of its stroke, for there the pressure of the steam has no effect in turning the crank, which must trust to the impetus it has already received. This, in a single engine, gives a very unequal motion to the paddles, making them go quick at one point and slow at another: but when there are two engines, this effect is counteracted by the cranks being set at right angles to one another; thus, when the starboard crank is at its top or bottom point, where the steam has no effect upon it, the larboard (or "port") crank is horizontal, and exerting all its force, and helps to carry the starboard one over its centre, by which means an equal motion is given to the engine at all its different points.

34. The paddle-shafts and intermediate shaft rest on the top of a strong *frame* (I in fig. 2, Plate I.) supported on columns and bolted firmly to the engine bottom; and the diagonal part of this framing extends down to the cylinder, to which it is securely fixed. Each engine has two of these frames, the whole supported by strong malleable iron *stay-bars* or *stay-rods* (*i* in figs. 1 and 2). Each engine also has supports catching the beams of the vessel above the engine. The framing shewn here is of cast-iron, but a malleable-iron framing is coming into use, which is much lighter, and at the same time very elegant. The side-levers, we may notice, are also sometimes made of malleable-iron, which is a great saving of weight.

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35. The Paddle-Wheels, or *Paddles*, by the action of which upon the water the ship is impelled, revolve within a strong framing of wood standing out on each side of the vessel; the principal part of this framing consists of the projecting ends of the *paddle-beams* with a fore and aft beam of wood fitted between them, called a *spring beam*, which supports the outer end of the *paddle-shaft*, the iron axis whereon the paddle-wheels revolve. A semicircular casing called the *paddle-box*, mounted on this frame, covers in the upper half of each wheel. The propelling boards fixed on the radiating arms of the wheel near their extremities are termed *floats*: the arms are bound together by strong iron rings. Farther explanations are given under the article *Paddle-wheel*. See also the article *Screw-Propeller*.

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36. Before starting the engines, the throttle-valve (Sect. 7 of this description) is opened, and the body of the slide-valve casing is thus filled with steam. The blow-through-valve (Sect. 12) is next opened, through which the steam rushes and fills the condenser. The steam being of a higher pressure than the atmosphere, drives out through the snifting valve *k* (Sect. 13), any water and air that may have gathered in the condenser. The blow-through-valve is then shut, and the steam which remains in the condenser takes the

form of water, and leaves a vacuum in its place. The engine is hereupon ready for starting.

The injection-cock is now opened, and a shower of water plays into the condenser. The slide-valves are either raised or lowered by hand as may be required to suit the position which the crank occupies at the time. In the position shewn in Plate I., the piston requires to move up, in order to urge the vessel forwards; consequently, the valves must be lowered by hand, when the steam will rush in below, and there being a vacuum above, the piston will rise, taking along with it the side-rods and cylinder end of the side-levers, and sending down the connecting-rod and crank, which brings round the paddle-wheels and urges the vessel onwards. When the piston has nearly arrived at the top of the cylinder, the slide-valves must be raised by hand in time to give the piston the turn. The steam now rushes in above the piston, while the steam below passes into the condenser, and is instantly reduced to water; this creates a vacuum below the piston, the steam then forces down the piston, sending down the side-rods and cylinder ends of the side-levers, and raising the connecting-rod, and also the crank on the opposite side from that on which it went down, and thus the paddles are kept turning in the same direction. After a few turns by hand, the gab of the eccentric-rod (Sect. 28) is allowed to fall upon its stud on the gab-lever, (which is termed "*putting the engine in gear*"); the slide-valves are then worked by the engine itself, which is by this time set in active motion.

When required to stop slowly, the engineer diminishes the supply of steam by means of the throttle-valve *(at the same time easing the safety-valve)*, and the motion of the engine is thereby retarded; he then disconnects the eccentric-rod, or, as it is termed, "*throws the engine out of gear*," and puts the slide-valves at half stroke by hand, which causes both valve-faces to cover their ports, and, the steam being thus completely cut off from the cylinder, the engine soon stops. If required to stop instantaneously, heave the engine out of gear, shut the throttle-valve, at the same time easing the

safety-valve, cut off the injection-water from entering the condenser, and raise or depress the slide-valve, according as may be required, in order to reverse the steam, by which means the impetus of the piston is thus overcome. In order to reverse the engine, taking it in the position shewn in Plate I., the slide-valve requires to be *raised* by hand, so that the steam entering above, may depress the piston, lower the side-rods and cylinder ends of the side-levers, raise the connecting-rod and crank, send the paddles round in the backward direction, and thus urge the vessel astern.

The eccentric being loose and having two ways of catching, adapts itself to either way the engine goes.

THE BOILERS.

37. The Boiler (N in Plate I. fig. 3) is an apparatus which, being partly filled with water, and fire applied to the outside, generates steam to supply the engine.

Boilers are made either of malleable-iron plates or of copper —the latter makes a much superior boiler, as it does not corrode like iron, and though much more expensive in the first cost, copper boilers will last out two or three sets of iron boilers. Copper boilers are therefore generally used by vessels on distant stations, to avoid the necessity of frequent renewal. The shape of the boilers for marine engines is of little consequence, as the furnaces and flues are in the interior ; their shape is therefore adapted to economize room, and the spaces between them and the ship's sides are used as coal boxes.

The boiler is usually in two or more pieces, and the steam from the boilers of both engines is collected in a *Steam-chest* (O in fig. 3) placed on the top of them. The pipe which leads the steam to the engines proceeds from this chest.

The best kind of boiler is the *Tubular Boiler*, the furnace mouths for which enter from before or abaft, and the flame and smoke pass through tubes running right through the boiler, surrounded by the water. But, in general, boilers are made simply with *flues* or passages from the furnaces taking

as many turns as possible through the water. In fig. 3, *t* is the neck of the flues.

38. The *Funnel* (N in Plate I. fig. 3) is fastened on the top of the steam-chest where the flues for both boilers meet.

Water is supplied to the boilers (while the engines are at work) by means of the feed-pumps, which draw it from the hot-wells. But before the fires are on, the boilers first get water by opening the blow-off pipes to the sea, which fills them up to the water-line: the additional water still required is then forced in by the *deck-pumps*. These are pumps at the side of the vessel worked with a lever by manual power, for the purpose of washing the decks, &c.: when the engine is going, they can be connected to it for the use of the ship.

40. Each boiler has a "*man-hole*," secured by a door, for convenience of getting in to clean them; this operation requires to be done frequently, as the salt and other matter contained in the water, if allowed to remain long, forms on the inside of the boiler a crust which, being a bad conductor of heat, both wastes fuel and leaves the shell of the boiler exposed to the fury of the fire. There are also *sludge-holes* at the ends of the water passages between the flues, by which the deposit can be raked out.

41. *The Safety-Valve* (*a* in Plate I. fig. 3) is a conical valve communicating with the boiler and opening outwardly; it is so loaded that when the steam in the boiler exceeds its proper pressure it raises the valve and escapes by a pipe called the *waste-steam-pipe* (*b* in Fig. 3).

The safety-valves are generally situated on the top of the steam-chest, at the foot of the funnel.

The best plan of loading a safety-valve is by means of an upright rod which a number of weights are bored to fit so as to be easily slipped off and on,—with a lever to lift them off on emergencies. This is better than a valve with a loaded lever, for, in a heavy sea, the jerking of the lever must be continually changing the pressure.

See section 36 of this description.

42. *Guage-Cocks.* For ascertaining the height of the water in the boiler, three or more pipes are used, having a

cock (called a *guage-cock*) to each. The lowest pipe is fixed in the side of the boiler, at a depth below which the water should never be allowed to pass, and the highest a little above the proper height of the water. When the cocks are opened and water comes from the lowest pipe and steam from the highest, there is a proper supply of water in the boiler; but, if both send out steam, there is too little water, and if both emit water there is too much.

A neater apparatus than the above is a glass tube fixed on the front of the boiler, furnished with a cock at top and bottom: the lower cock at such a depth as always to communicate with the water, and the upper one communicating with the steam: when both cocks are opened together, the water will rise in the tube to the exact height that it is in the boiler, and thus shew what quantity is within.

43. *Mercurial Guage.* To show the pressure of the steam more accurately than can be done by the safety-valve, this guage is used, consisting of a curved tube, partly filled with mercury; one branch of the tube is open to the steam in the boiler, and the other to the atmosphere; the tube has a scale attached to it, divided into pounds, and this indicates exactly how much either the steam or the atmosphere preponderates, the one over the other.

44. Each boiler ought also to have an *internal safety-valve,* opening from the outside, in order to allow air to enter the boiler when the pressure becomes too weak within; because, after blowing-off the boilers, and when the steam within them has cooled down, they would be left in a state of vacuity, and exposed to the external pressure of the atmosphere: such a valve counteracts this, and allows the air to enter when the pressure within becomes weakened.

45. At the foot of each boiler there is a pipe called the *blow-off-pipe,* communicating with the sea, and furnished with a *cock* to open or shut it. At the end of every voyage, the blow off cocks being opened, the steam forces out the water and leaves the boilers empty: the operation is termed *blowing-off.* These cocks are opened also at intervals in the course of the voyage, to allow the brine which collects at the bot-

tom of the boilers to be blown off; care being taken not to keep them too long open, and so endanger the boilers by letting the water get too low. In some vessels *Brine-pumps* are used for clearing the boiler of this deposit.

The most important and comprehensive work on the subject of the Steam-Engine, Steam Navigation, and Steam Naval Architecture, is Mr Tredgold's valuable Treatise.

ALPHABETICAL INDEX

TO

DESCRIPTION AND PLATES OF MARINE STEAM-ENGINE.

		Plate I. Fig.	Plate II. Fig.	Sect. of Description.
Air-Cone	*ac*	2		19
Air-Pump	A	1, 2, & 3		14 & 18
Air-Pump Bucket	Z	2		14
„ Bucket-Rod (or Pump-Rod)	G	2		14
„ Bucket-Valve	W	2		16
„ Cross-Head	Q	1 & 2		24
„ Guide-Rods	4	2		24
„ Side-Rods	*m*	1		24
Bilge-Pumps	*s*	1 & 3		26
Blow-off Pipe (and Cocks)				45
Blow-through Valve				12
Boilers	N	3		37, &c.
Boiler-Flues (Neck of)	*t*	3		37
Brine-Pumps				45
Bucket (Air-Pump)	Z	2		14
Bucket-Valve (Air-Pump)	W	2		16
Casing (Slide-Valve)	B	1 & 2	1 & 2	2
Cocks				
Blow-off Cocks				45
Guage-Cock				42
Injection-Cock				11 & 36
Condenser	V	1, 2, & 3		11
Connecting-Rod	*N*	2		27
Counter-Balance Weight (Lever for Counter-Balance Weight *j*)	*i*	1 & 2		5
Crank	U	1 & 2		29

		Plate I Fig.	Plate II. Fig.	Sect. of Description
Crank-Pin	*x*	1		
Crank-Shaft	Y	1 & 2		29
Consisting (when there are two Engines) of the *Paddle-Shafts* Y, and *Intermediate-Shaft* Y 2				
Crank-Shaft Pillow-Blocks	*n*	1 & 2		
Cross-Head (Cylinder)	T	1, 2, & 3		22
Cross-Head (Air-Pump	Q	1 & 2		24
Cross-Tail	X	2 & 3		28
Cylinder, or Steam-Cylinder	C	1, 2, & 3		1
Cylinder Cross-head	T	1, 2, & 3		22
„ Escape-Valves	*a*	1 & 2		6
„ Side-Rods	*l*	1 & 3		32
Deck-Pumps				39
Discharge-Pipe	*q*	2		18
Discharge-Valve (of air-pump)	E′	2		17
Eccentric	E		1, 2, 3, & 4	31, 32
Eccentric Hoop	S		1, 2, & 3	31
Eccentric-Rod	*v*		1, 2, 3, & 4	31
Engine-Bottom	K	2		11
Escape-Valves (Cylinder), or *Water-Ecape Valves*	*a*	1 & 2		6
Expansion-Valve				20
Feed-Pump	*r*	2		19 & 25
Flues (Boiler)				37
Neck of Boiler-Flues	*t*	3		„
Foot-Valve	S	2		15
Frames of Engine	I	1 & 2		34
Funnel	N′	3		38
Gab				32
Gab-Lever	*m*		1, 2, & 4	32 & 31
Gauge-Cocks				42
Gauge (Mercurial)				43
Guide-Rods (air-Pump)	4	2		24
Hall's Condenser				11
Hoop (Eccentric)	S		1, 2, & 3	31
Hot-Well	H	1, 2, & 3		19
Injection-Pipe (and cock)	*z*′	2		11 & 36
Intermediate Shaft. See *Crank-Shaft*				
Internal Safety-Valve				44
Lever for Counter-Balance Weight	*j*	1 & 2		5
Lever (Gab)	*m*		1, 2, & 4	32 & 31
Lever (or *Spanner*) of Parallel Motion	*e*	1 & 2		21
Levers (Side)	L	1, 2, & 3		21
Lever for Slide-Valves, on Weigh-Shaft	*h*	2	1, 2, & 4	31

		Plate I. Fig.	Plate II. Fig.	Sect. of Description.
Man-Holes				40
Mercurial Gauge				43
Neck of Boiler-Flues	*t*	3		37
Nosles, or *Steam Ports*	*o* & *u*	2	1 & 2	2
Nosle-Faces				2
Packing-Boxes (in Slide-Valve Casing)				3
Paddle-Shaft. See CRANK-SHAFT	Y	1 & 2		35 & 29
Paddle-Wheel				35
Parallel Bar of Motion	*d*	1 & 2		21
Parallel Motion Shaft	*b*	2		21
Parallel Motion (Lever, or Spanner of)	*e*	1 & 2		21
Parallel Motion (Radius Bar of)	*c*	1 & 2		21
Pillow-Blocks (Crank Shaft)	*n*	1 & 2		
Pipes				
Discharge-Pipe	*q*	2		18
Injection-Pipe				11
Steam-Pipe	*p*	2 & 3	1 & 2	2
Waste Steam-Pipe	*b*	3		41
Piston, or *Steam Piston*	P	2		8
Piston Rod	R	2		9
Ports (Steam), or *Nosles*	*o* & *u*	2	1 & 2	2
Pumps				
Air-Pump	A	1, 2, & 3		14
Bilge-Pumps	*s*	1 & 3		26
Brine-Pumps				45
Deck-Pumps				39
Feed-Pump	*r*	2		19 & 25
Pump-Rod (Air), or Bucket-Rod	G	2		14
Radius Bar of Parallel Motion	*c*	1 & 2		21
Rods				
Connecting-Rod	N	2		27
Eccentric-Rod	*v*		1, 2, 3, & 4	31
Piston-Rod	R	2		9
Side-Rods	*l*	1 & 3		23, 24, & 25
Slide-Valve-Rod	*f*	2	1 & 2	4
Stay-Rods, or *Stay-Bars*, for framing	*y*	1 & 2		34
Safety-Valve	*a*	3		41 & 36
Safety-Valve (Internal)				44
Shafts				
Crank-Shaft, Paddle and Intermediate Shafts	Y & Y2	1 & 2		29
Weigh-Shaft, or Wiper-Shaft	*g*	1 & 2		5 & 31
Side-Levers	L	1, 2, & 3		21
(Main-Centre of Side-Levers)	M	2		
Side-Rods (Air-Pump)	*m*	1		24

		Plate I. Fig.	Plate II. Fig.	Sect. of Description.
Side-Rods (Feed-Pump) .				25
Side-Rods (Cylinder) .	*l*	1 & 3		23
Slide-Valves .	D	2	1 & 2	3 & 31
Slide-Valve Casing .	B	1 & 2	1 & 2	2
Slide-Valve Lever, on Weigh-Shaft	*h*	2	1 & 2 & 4	31
Slide-Valve Rod . .	*f*	2	1 & 2	4
Sludge-Holes . . .				40
Snifting Valve, or Tail-Valve	*k*	2		13
Spanner (or Lever) of Parallel Motion . . .	*e*	1 & 2		21
Stay-Bars, or STAY-RODS, for Framing	*y*	1 & 2		34
Steam-Chest . . .	O	3		37
Steam-Cylinder, or Cylinder	C	1, 2, & 3		1
Steam-Pipe . . .	*p*	2 & 3	1 & 2	2
Steam-Pipe (Waste) . .	*b*	3		41
Steam-Piston, or Piston .	P	2		8
(Piston-Rod) . . .	R	2		9
Stuffing-Box (for Cylinder Cover				1
Tail-Valve or Snifting-Valve	*k*	2		13
Throttle-Valve . . .				7
Tubular Boiler . . .				37
Valves.				
Air-Pump Bucket Valve .	W	2		16
Blow-through Valve .				12
Discharge-Valve . .	E′	2		17
Escape Valves or Water Escape Valves (Cylinder)	*a*	1 & 2		6
Expansion Valve . .				20
Foot-Valve . . .	S	2		15
Snifting-Valve or Tail-Valve	*k*	2		13
Throttle-Valve . . .				7
Valve-Lever (Slide) . .	*h*	2	1 & 2 & 4	31
Waste Steam-Pipe . .	*b*	3		41
Water Escape Valves . .	*a*	1 & 2		6
Weigh-Shaft, or Wiper-Shaft	*g*	1 & 2		5 & 31

STEAM-FRIGATE. See *Frigate.*

STEAM-NAVIGATION. See *Steam-Ship.*

STEAM-PIPE. See description of *Steam-Engine.* Sect. 2. WASTE STEAM-PIPE, Sect. 41.

STEAM-SHIP, STEAM-VESSEL, STEAM-BOAT, or

INDEX TO FIG. 5.

STERN-FRAME.

1 Stern-Post.
2 Transoms.
3 Main Transom, or Wing-Transom.
4 Transom-knees.
5 Quarter-Stanchions.
6 Long Stern-Timbers.
7 Short Stern-Timber.
8 Arch-Board.
9 Fashion-Timbers.

INDEX TO FIG. 6.

MIDSHIP SECTION.

1 Keel.
2 Keelson.
3 Keelson Rider.
4 Middle Line or *Centre Line*.
5 Floor Timber.
6 Chocks for fillings to the Timbers.
7 Second Futtocks.
8 Short Top-Timbers.
9 Stanchions or *Rough-tree Timbers*.
10 Rails, or *Rough-tree Rails*.
11 Upper-deck Beam.
12 Hold Beam.
13 Standard Knees or, *Deck Standard Knees*.
14 Waterways.
15 Planksheer.
16 Sheer-Strake.
17 Wales.
18 Bilge Planks (inside and outside.)
19 Futtock Planks.
20 Limber Boards.
21 Clamps, or *Sea-Crafts*.
22 Shelf-Pieces, or *Stringers*.

INDEX TO FIG. 7.

FRONT ELEVATION OF BOWS IN FRAME.

1 Stem.
2 Bow-Ribbands.
3 Bow-Timbers.
4 Knight-Heads,
5 Hawse-Timbers.

STEAMER. A vessel propelled by means of steam-power, whether through the intervention of paddle-wheels or of a screw-propeller. Steam-ships are generally built long, narrow, and low, and often flat-floored.

The orders given to direct the engineer in regulating the movements of a steamer by the action of the marine-engine, may be here noticed: *Go a-head!* (or *Go on!*) *Turn a-head! Half-turn a-head! Full speed! Half speed! Stop her!* all of which are self-explanatory phrases. *Ease her!* or *Slow her!* means to reduce the speed of the engine somewhat. *Go slow!* is the order to cut off as much of the steam as is practicable, still keeping the engine in play. *Back her!* is to reverse the movement of the cranks so that the paddles may move round in a backward direction, tending to urge the vessel astern: see description of *Steam-Engine*, Sect. 36.

An abstract of the Act for regulating Steam Navigation, the construction of sea-going Steam-vessels, &c., which has been passed while the preceding part of this work was in the press, is given in an Appendix hereto.

STEAM-TUG, or TUG. A steam-vessel employed for towing.

STEAM-VESSEL. The same as *Steam-Ship*.

STEAMING PLANKS. See *Kiln*.

STEAMER. See *Steam-Ship* and *Kiln*.

STEELER. [STEALER].

STEER. To guide a ship or boat by the management of the helm. The person who steers is called the *Helmsman* or *Steersman*.

To steer small, means to steer steadily without putting the helm too much to either side. *To steer large*, is the reverse.

STEERING-WHEEL. A wheel erected on a frame either before or over a vessel's tiller, having a horizontal shaft to which a barrel is fixed for winding the wheel-chains around, in order to give greater power and facility in steering. See *Wheel-Ropes*.

A Steering Apparatus, lately contrived by Messrs Clarke and Pirnie of Newburgh, in Fife, seems deserving of notice. It

consists of an endless screw revolving between two metal blocks fixed in the deck at one side of the shaft of the steering wheel, and parallel to it: abaft the rudder-head there is a sproket wheel on the shaft of the steering-wheel, and another sproket wheel of the same diameter immediately opposite to it on the shaft of the screw, with a pitch chain over them for driving the screw. The latter acts upon the segment of a toothed wheel (serving the purpose of a tiller) fixed on the side of the rudder-head. The main advantage of this contrivance is, that any strain on the rudder can never have the effect of turning the screw round in either direction, while the screw acts with ease in directing the movements of the rudder. Between each end of the screw shaft and an abutment on the metal block, a piece of cork or (which would be preferable) a steel spring is introduced for the purpose of giving the rudder a little play in a heavy sea.

STEERAGE. That part of the 'twixt decks which is immediately before a vessel's cabin, and separated from it by a bulkhead. In merchant ships, this space is sometimes fitted up with berths for the petty officers and sailors; but the latter more commonly occupy the forecastle.

In a vessel carrying passengers, those who do not occupy the main-cabin and quarter-deck are termed *Steerage Passengers.*

STEERAGE also implies the act of steering: hence a vessel is said to have *steerage-way,* when she has sufficient way to give the helm effect.

STEERSMAN. See *Steer.*

STEEVE. A bowsprit *steeves* more or less according as it is elevated more or less from the horizontal. *The Steeve* is the angle which it makes with the horizon. *(Dana's Seaman's Manual.)*

STEM. The principal timber at the foremost extremity of a vessel, into a rabbet in which the ends of the bow-plank on each side are fixed. Its lower end is scarphed to the keel, and the bowsprit rests on its upper end. It gets the name of the *main stem,* to distinguish it from the *Cutwater*

or *false stem*, which is a piece fayed to the fore part thereof. See *Outwater*. The main stem, when made of two or more pieces, is usually hook-scarphed. (Plate II. Fig. 7).

STEMSON. A piece of compass timber wrought on the after part of the apron, to afford additional strength in ships of great burden. Its lower end scarphs on to the keelson, and it should be continued upwards beyond the scarphs of the apron sufficiently far to give a good shifting.

STEP *of a lower Mast*. A clamp of wood bolted on the top of the keelson, having a mortise into which the tenon on the heel of the mast is inserted. In ships employed in the timber-trade, the step of the mizen-mast is, for convenience of stowage, fixed between two of the 'twixt deck beams.

TO STEP *a Mast*, is to put it into its step.

STEPPING-LINE. See *Bearding*.

STERN. The aftermost part of a vessel above the wing-transom.

By the Stern. See *By the Head*.

STERN-BOARD. See *Board*.

STERN-FAST. See *Fast*.

STERN-FRAME. See *Transoms*. (Plate II. Fig. 6.)

STERN-KNEE. See *Sternson*.

STERN-MOST. The reverse of *Head-most*.

STERN-POST. The principal piece of timber in a vessel's stern-frame; to it the rudder is hung and the transoms are bolted. Its lower end is tenoned into the keel. The after ends of the outside planking butt against the stern-post. (Plate II. Fig. 5.) The stem and stern-post are the two extremes of a vessel's frame.

The False Stern-Post, is a piece tabled on to the after edge of the main stern-post, for the purpose of increasing the action of the rudder, and thereby improving the steering.

The Inner Stern-Post, is fayed to the fore edge of the main stern-post, which it serves to strengthen; and its upper end forms a seat for the wing-transom. It also affords a sort of deadwood, on the fore part of which the other transoms are bolted, whereby their lengths are pre-

served—an object of great importance for the security of the ship, in binding her sides properly together at that part.

They are often named, shortly, the *Main-post*, *False-post*, and *Inner-post*.

STERN-RAILS, or RAILS OF THE STERN. Narrow pieces of projecting plank on which mouldings are raised,—arranged on a vessel's stern and counter in various forms, according to the fancy of the builder. Of these, there are in very large ships three kinds: the *Knuckle-rails* (at the knuckles of the stern-timbers), the *Counter-rails*, and the *Foot-rails*. See *Counter-rails*.

STERN-SHEETS. The after part of a boat abaft the rowers, furnished with seats for passengers.

STERN-TIMBERS. See *Timbers*.

STERN-WAY. See *Head-way*.

STERNSON, or STERN-KNEE. A piece of compass timber forming a continuation of a vessel's keelson, and extending over the deadwood to the stern-post, which is secured to it by bolts.

STEWARD. The person who attends in the cabin and serves out provisions to passengers in a merchant-vessel, packet, or steamer. See also *Purser*.

STIFF, expresses the quality of a vessel which is able to carry a great deal of sail without lying over much on her side —the reverse of *crank*. *(Dana's Seaman's Manual.)*

STIFF BREEZE. See *Fresh Breeze*.

STIRRUPS. See *Foot-ropes*.

STOCK *of an Anchor:* a beam of wood or a bar of iron secured to the upper end of the shank, at right angles with the arms. An iron stock is usually fixed with a lock, and unships, for convenience in stowing it on deck.

RUDDER-STOCK, or MAIN PIECE OF RUDDER. See *Rudder-Stock*.

STOCKS. The blocks and shores upon which a vessel is built.

STOMACH-PIECE. The same as *Apron*.

STOKE-HOLE. A scuttle in a steamer's deck, to admit

fuel for the engine. It is also applied to a space for the men standing in to feed and trim the fires.

STOKER or FIREMAN. A person employed to feed and trim the fires for the boilers of marine steam-engines. Those who stow and trim the fuel are termed *Coal-Trimmers*.

STOOL. The lowest transom of a vessel's stern-frame; or, more correctly, a chock introduced beneath the lowest transom: to it the lower ends of the fashion-pieces are secured.

BACKSTAY-STOOLS. Small channels worked in abaft the principal channels, in some ships, for the chains and dead-eyes of the backstays.

STOP. A temporary fastening for a rope; generally of rope-yarn. The operation is called *Stopping*. A *Stop*, also means a projection for any thing to rest or bear upon.

STOP THE VENT. See *Vent-Plug*.

STOP-WATER-BORES, in shipbuilding, auger holes made, one through the keel and the after corner of the stem foot, another through the keel and the fore corner of the stern-post, at their joining with the keel; a treenail (called the *stop-water*) being driven through each, to prevent the admission of water into the ship, at these joints.

STOPPAGE *in transitu*. The exercise of that right which the law gives to the consignor (or the shipper) of goods to stop them *in transitu*, that is, *on their passage* to the consignee (or the buyer) when the latter has become bankrupt or insolvent, and "before or at their arrival at the place of destination to cause them to be delivered to the consignor himself or to some other person for his use." This subject is comprehensively treated in *Serjeant Shee's edition of Tenterden on the Law relating to Merchant Ships and Seamen*, and in *Professor Bell's Commentaries on the Law of Scotland*.

STOPPER. A stout rope with a knot at one end, and sometimes a hook at the other, used for various purposes about a vessel's deck; as, for checking and holding fast (or "*stoppering*") a rope cable when it is veered out, for which purpose the hook is attached to a ring-bolt on deck, the knot

having a lanyard made fast to it. For chain cables there are stoppers of various kinds adopted: such as, *an iron clamp with a lever*, or *a double claw of iron with a rope attached to it*, and so on. *Compressor-stoppers*, or *Compressor chain-cable stoppers*, which are of various forms, are made on the principle of holding the chain by compression.

CATHEAD-STOPPER, or *Cat-stopper*. A piece of rope or chain rove through the ring of an anchor, for hanging it by, previously to casting anchor.

COMPRESSOR-STOPPERS. See *Stopper*.

PREVENTER-STOPPERS. Short pieces of rope, knotted at one end, used for securing the clues of sails in a ship of war during action, and also for assisting the tacks of courses when much strained.

RIGGING-STOPPERS, are for setting up and securing any shroud that happens to be shot away in time of action.

STORES *of a vessel*: the ropes, sails, provisions and other outfit with which she is supplied. These are included in the insurable value of the ship. See abstract of *Wreck and Salvage Act*, No. I. of Appendix.

STORMS. Various kinds of storms or tempests may be found noticed under the heads, *Ecliptic, Gale, Hurricanes, Monsoon, Squall, Typhoon, &c.*

STORM-SAIL. Any sail made of very stout canvass, of smaller dimensions than a sail in ordinary use, to be employed instead of it in heavy weather.

STOVE. See *Bilge*, and *Kiln*.

STOW-WOOD. Billets of wood used as chocks for steadying casks in a vessel's hold.

STOWAGE. The disposition of a vessel's ballast, stores, and cargo. This term is also used to denote space for STOWING goods, &c., in other words, STOWAGE ROOM.

The stowing of a vessel's cargo ought to be conducted under the special superintendence of the master, who is responsible along with the shipowner for any injury arising to the goods from improper stowage.

The cargo ought to be defended from contact with the ship's sides and bottom, more particularly from the latter by

sufficient dunnage, and the pumps should be carefully sounded and attended to, during the process of loading, as well as during the course of the voyage. If a vessel have a lower deck, and it be caulked, this ought also to be "dunnaged."

In Mr Lorimer's *Letters to a Young Master Mariner*, valuable suggestions are presented as to the care which should be taken that one description of goods be not exposed to receive damage from another, for example, packages of silk by being stowed under casks of oil—sugar, or other commodities liable to damage from leakage, by being placed under casks containing any liquid—or crates by being placed in contact with each other. It is also noticed therein, that salt should be separated from other goods by bulkheads; that grain and seed, when stowed in bulk, ought to be secured by planks so as to prevent their shifting when the vessel lies over; and farther important remarks occur in regard to the stowing of casks and of goods in bags.

Mr Horsburgh, in the Introduction to his *India Directory*, very properly recommends that all the light goods should be stowed along the ship's sides and at the extremities, and the heavy articles in a longitudinal section over and on each side of the keel from the fore to the after hatchways, as circumstances may require; adding, that the dead-weight may be carried in this manner up to the deck, or to any height consistent with the stability of the ship. He mentions that this plan was adopted in the case of a vessel whose cargo consisted chiefly of iron, and that she was very easy during her passage from London to Bombay.

It is the master's duty to provide ropes, &c., proper and sufficient for taking the cargo on board, and if damage occur in letting it down into the hold he is responsible. *(Shee's Edition of Tenterden,* p. 346).

See *Average (Particular) on goods.*

STRAIGHT OF BREADTH, in shipbuilding, the space before, at, and abaft the dead-flat, in which the ship is of the same uniform breadth. *(Shipwright's Vade Mecum.)*

STRAINER. See *Rose.*

STRAIT. A narrow passage connecting a gulf with the sea, or any part of the sea with another.

STRAKE. A single range of planks abutting against each other, wrought from one end of a ship or boat to the other, whether externally or internally.

The internal planking of the ship is termed *Ceiling*. See that article, and also *Clamps*, *Limber-strake*, and *Spirketting*. (Plate II. fig. 6).

Of the *outside planking* we shall here notice the following, with special reference to the articles *Plank-sheer*, and *Wales*. (Plate II. fig 6). *The Garboard-strake* is the first strake next the keel: its edge is let into a groove or channel in the side of the keel, called the Rabbet of the keel. The plank between the glarboard-strake and lower backstrake is called generally *the bottom-plank:* that on the *bilge* of the ship is thicker than the rest of the bottom plank. *The Black-strakes* are the strakes, one or more, immediately above and below the wales, thinner than these, but thicker than the rest of the planking: the blackstrakes below the wales get the name of diminishing strakes. *The Scrape-strakes*, or more properly *Topside-plank* or *Topsides*, are those strakes between the sheer-strake and upper black-strake. *The Sheer-strake*, or *Paint-strake* is the uppermost strake of plank immediately below the plank-sheer: it generally has a moulding corresponding with that on the edge of the plank-sheer. (Plate II. fig. 6).

See also *Binding-strake*, *Landing-strake*, and *Sand-strake*.

STRAND. A number of rope-yarns twisted together. Three or more strands twisted together form a rope.

STRAND also denotes a sea beach.

STRANDING, in marine insurance, implies generally the act of a vessel being driven ashore, taking the ground not in the ordinary course of the navigation, but by reason of some unforeseen accident, and remaining stationary for some time. If a mere instantaneous stoppage take place (as, "for a minute and a-half") the ship is not considered to be stranded within the meaning of the memorandum at the foot of a

policy of insurance *(Lord Ellenborough's Judgment in case reported* 4 *M. & Sel.* 503*)*. In the case of *Wells* v. *Hopwood (*3 *B. & Adolph* 20), Lord Tenterden observed that, "where a vessel takes the ground in the ordinary and usual course of navigation and management in a tide river or harbour upon the ebbing of the tide or from natural deficiency of water, so that she may float again upon the flow of the tide or increase of water, such an event is not to be considered a stranding, but where the ground is taken under any extraordinary circumstances of time or place, by reason of some unusual or accidental occurrence, such an event shall be considered a stranding within the sense of the memorandum." Mr Richards of Lloyd's concludes that what would constitute a stranding at a port where the ship had sought refuge might not be a stranding at the port of loading or of discharge: as an instance whereof he refers to the case of *Kingsford* v. *Marshall (*8 *Bing.* 458; 1 *M. & Scott* 657; *Harrison's Digest)*, in which it was decided that a vessel taking the ground, upon the ebbing of the tide, in the place where it was intended that she should, was not to be construed into a stranding, although she settled on some hard substance, whereby holes were made and the cargo suffered damage. Again, (in *Hearne* v. *Edmunds* 1 *Brod. & Bing* 388; *Harrison's Digest,* and *Stevens's Essay on Average)* a vessel took the ground on two successive days in going up Cork harbour, under the direction of a pilot ("a circumstance usual with all vessels of the same description in going up Cork river") and being afterwards moored in the ordinary course at the quay where she was to discharge, upon the receding of the tide, listed over on her broadside and remained in that position for two whole tides, whereby the vessel and cargo were much injured; but the ship was held not to be stranded.

With regard to the effect of the words "unless the ship be stranded," occurring in the memorandum at the foot of a policy of insurance, it has been decided (in *Burnett* v. *Kensington 7th Term Rep.* 210, *Marshall on Insurance)*, that a stranding renders the memorandum inoperative, and the in-

surer becomes liable for any partial loss sustained by any of the articles mentioned in the memorandum, though such loss did not arise from the stranding but solely from another cause." Even where a ship under average has been repaired at a cost below three per cent. on her value, and is *subsequently* stranded in the course of the voyage without receiving injury, the claim is paid by the insurers.

Voluntary Stranding, or (as it is also termed) *Beaching*—that is to say, the running of a vessel purposely aground in order to escape foundering or going to pieces on the rocks, is a step the consequences of which it is now the practice to treat as particular average loss; in other words, the loss or damage which the ship or cargo may thereby sustain is not made good by general average contribution.

STRAP. [STROP].

STRAY-LINE. See *Log-Line* and *Harpoon*.

STREAK. [STRAKE].

STREAM-ANCHOR. See *Anchor*.

STREAM-CABLE. See *Cable*.

STREAM A BUOY. See *Buoy*.

STRETCH. To sail by the wind under a crowd of canvass.

STRETCH OUT! An order to a boat's crew to pull strong.

STRETCHERS. Pieces of wood placed across a boat's bottom, inside, for the oarsmen to set their feet against in rowing. Also, cross pieces of wood put between a boat's sides to keep them apart when hoisted up on a vessel's deck and griped, (*Dana's Seaman's Manual*).

STRIKE. A term applied to the lowering of sails, or hauling down of colours, as a token of surrender or salute; and also to the lowering an upper mast and securing it by lashing its heel to the mast below. See also the article *Sound*.

STRINGERS. Strakes of plank wrought round the inside of a vessel close to the under sides of the beams. They are bolted to the clamps and timbers, and are scarphed to each other. As they are put on edgeways to the ship's sides or to the clamps, and serve as a shelf to rest the beams upon,

they are generally called SHELF-PIECES, or *Shelves*. (Plate II. fig. 6.)

If shelf-pieces have not been introduced at the first, it is often found necessary to resort to them, as an assistance to the other fastenings, when the ship is found to be working about the waterways; and they afford a very substantial binding, both in the athwartship and fore-and-aft directions.

STRIP THE MASTS. To dismantle a ship, that is to clear the masts of their rigging and other furniture.

STROKE-OAR. See *Oar*.

STROP, or *Strap*. A piece of rope spliced and put round a block to keep its parts well together, and by which it is suspended: it sometimes also encircles a thimble with a hook attached to it. Blocks have now generally iron strops, which are found to be more snug as well as durable. Strops for dead-eyes in like manner are of iron. Those for buoys are often made of rope; iron buoys have a ring at each end by either of which they may be suspended.

Any short piece of rope, with its ends spliced together, gets the name of a *strop*. Such strops are used for various purposes, as, for hooking a tackle to.

STUDDING-SAIL. A light sail set outside of any square sail, on a boom, called the *studding-sail-boom*, rigged out for that purpose from the yard arm; its head is extended by a *studding-sail-yard*, which is hoisted by a whip purchase called the *studding-sail-halyards*. They sometimes improperly get the name of *steering-sails*. Studding-sails are carried only with a fair wind, and in moderate weather. They are named, according to their respective positions, the *lower*, *topmast*, and *topgallant* studding-sails.

SUB-MARINE THERMOMETER. See *Thermometer*.

SUIT OF SAILS: the whole sails required to be bent for a vessel.

SUPERANNUATED, in reference to the Royal Navy, is a term applied to any officer who has by permission left the service on retiring pay, on account of old age or infirmity.

SUPERCARGO. A person employed to go out in a merchant vessel bound for foreign parts, in order to take charge of her cargo, and dispose of it there to the best advantage.

SUPERNUMERARIES, as relative to maritime affairs, implies men over and above the established complement of a vessel, or who are not in the ship's books.

SUPPLEMENT *of Longitude*: The term commonly applied to its complement, or what it wants of 180 degrees.

SUPPORTERS, in shipbuilding, cleats or knees, one of which is fitted to each cathead in large ships.

SURF. The foam occasioned by the breaking of the sea upon the shore.

SURGE. A large swelling wave.

TO SURGE *a rope* or *cable*, is to slack it up suddenly when it renders round a pin, or round a winch, windlass, or capstan. See *Capstan*.

SURGEON. This name is given to the person engaged to act in a medical capacity on board of any merchant ship, whether he may have been authorised by law to practise in this kingdom as a physician, surgeon, or apothecary. The statute 7 and 8 Vict., c. 112, requires, under a heavy penalty, that a surgeon shall be engaged for every ship having one hundred persons or upwards on board; and also for every ship the voyage of which shall be deemed under the provisions of the passengers' act 5 and 6 Vict., c. 107, to exceed twelve weeks: a voyage to the Cape of Good Hope, or the Falkland Islands is computed at fifteen weeks; to Central America or to any part of South America, except its West Coast and British Guiana, or to the West Coast of Africa, at twelve weeks, and so forth. But by the Act 8 Vict. c. 14, so much of the first mentioned statute as relates in this respect to ships carrying passengers to the East of North America is repealed. See *Provisions*.

In a ship of war, there is always a Surgeon engaged, as well as an Assistant or Assistants under him; which assistants must each have undergone the usual course of study, passed the necessary examination, and received a diploma as surgeon, and before being allowed to enter the Royal Navy as assistant surgeons, be re-examined by a medical board of which the Director-general of the medical department of the Navy is president.

SURMARKS, or SIRMARKS. See *Ribband-Line.*

SURVEY. An inspection by practical men of a vessel or her stores, or of goods laden on board. It is usual and proper to employ at least two surveyors to report in any case of damage to ship or cargo: when goods have been sea-damaged, the master of the vessel, also, ought to be called to attend the survey upon them and to certify the nature of the damage. See the article *Hydrography.*

SWAB. A mop made of rope-yarns and having a rope handle; used for cleaning and drying decks.

FIRE-SWAB. See *Tompion.*

SWAY UP. To throw a strain on a mast-rope, in order to start the mast upwards, so that the fid may be taken out previously to lowering the mast. To raise a yard-arm in the act of sending down the yard.

SWEEP. To drag the bottom of the water for an anchor.

SWEEPS, signify large oars used in small sailing vessels. See also *Shipbuilding.*

SWEETENING COCK. See *Bilge-Water.*

SWELL. The heavy rolling of the sea after a storm. That which is occasioned along the shore by a distant storm is called a *ground swell.*

SWIFT. To bring two shrouds or stays close together by ropes. *To swift in the bars of the capstan,* is to secure them in their places in the capstan by means of the swifters.

SWIFTER. The forward shroud of a lower mast. Swifters also mean ropes used to confine the *capstan bars* to their places when shipped. Swifter is also a name given to a rope or chain used to secure a raft; for this purpose chain is best adapted.

SWIG. A term applied by sailors to the act of hauling off upon the bight of a rope, when its lower end is fast, in order to get greater purchase than by hauling directly.

SWINGING-BOOM. A name for the boom which stretches the foot of a lower studding-sail.

SWIVEL. A species of large link of iron in a chain cable, made so as to revolve upon an axis in order to keep turns out of the chain; it is introduced at that part of the

chain which is below water when the ship is at anchor. Being apt to get fixed or injured by rust, it is now rarely used.

A SWIVEL STOCK, is an upright piece of wood which is made to step, or is fixed in the bows of a boat, for the purpose of shipping into it a small gun, which gets the name of a SWIVEL, working on a pivot so as to turn in any direction.

SWORD-MAT. See *Mat.*

SYMPIESOMETER, or NEW AIR BAROMETER. An instrument invented for measuring the weight of the atmosphere by the compression of a gaseous column. It is said to be sooner sensible of the changes of the atmosphere than the common marine barometer, and not to be affected by the motion of a ship at sea.

The following account of this instrument is given by its inventor, Mr Alexander Adie of Edinburgh, who, among other improvements that he has made upon it since it was first introduced, mentions in particular "more perfect methods of fixing the scales, and the use of acid in place of oil to contain the inclosed gas, the advantage whereof is that it does not change with climate which the oil was subject to." He also states that a great number of sympiesometers are now made in London without proper attention to the scales, which has tended much to injure the high character which the instrument at first bore.

"The principle of the sympiesometer consists in employing an elastic fluid or gas, different from air, and any liquid, excepting quicksilver, which neither acts upon the gas which it confines, nor is perceptibly acted upon by the air, to the contact of which it is in some measure exposed. Hydrogen gas, azotic gas, or any of the gases not liable to be absorbed by the enclosing fluid, may be used; but I prefer hydrogen gas as superior to any other that I have tried.

"The enclosed gas with which the bulb and part of the tube is filled, changes its bulk, or occupies more or less space, according to the pressure of the atmosphere upon the surface of the fluid. The scale for measuring the change in the bulk of the gas, occasioned by a change of pressure, is formed experimentally.

"As the bulk of the gas is altered by any change that takes place in the temperature of the atmosphere, it is necessary to apply a correction on this account. For this purpose, the principal or barometric scale is made to slide upon another scale, placed either below it, or on one side of it, which is divided into degrees and tenth parts, so as to represent the change of bulk in the gas produced by a change of temperature under the same pressure, and corresponding to the degrees of a common thermometer attached to the instrument, the scale of which is also divided into degrees and tenth parts of a degree.

"When the sympiesometer is hung up for observation, the cistern must be opened by pushing up the small slider at its mouth, having previously unturned the nut at the bottom which is placed there to keep it down in carriage, and prevent the escape of the fluid from the cistern. If any of the fluid at the top of the column should be separated, which sometimes happens in carriage, hang it up for a few minutes to drain, then turn it into a horizontal position, so that the fluid may run quickly up, until the separated portion of it disappear, when it must be turned slowly upright. This operation may be repeated if found to be necessary, till the column of fluid be joined.

"In cases where the fluid has been very much separated from bad usage in carriage, or from placing the box with the top of the sympiesometer down, it is to be corrected by holding the sympiesometer with the top up, and having the stopper of the cistern close; shake the instrument by jerking it downwards, then hang it up to drain, when the column of fluid will be got to join.

MANNER OF USING THE INSTRUMENT.

"Observe the temperature by the thermometer, and set the pointer above the top of the sliding-scale, opposite to the degree of temperature upon the fixed scale; and then the height of the fluid, as indicated on the sliding-scale, will be the pressure of the air required.

"Suppose the temperature observed by the mercuri

thermometer to be 52°.4, then slide the sympiesometer scale until the pointer is at 52.4 on the fixed scale, at the right hand side under the sliding scale; it is to be observed, that the numbers on this scale, and also on the thermometer, read downwards, and the top of the column of red fluid stands opposite to the second division above the third tenth higher than the number 30. The height of the barometer is then 30 inches 3 tenths and 4 hundredths of an inch, or 30.34 inches. The tenths are easily distinguished from the hundredth parts, by the lines being drawn longer. As it is convenient to know what change has taken place since the last observation, the circular register at the bottom of the frame should be set, by turning the division on it corresponding to that indicated by the sympiesometer to the fleur-de-luce, or index. When the column of fluid descends, bad weather may be expected, and when it rises, the weather will in general be fine."

SYPHERED, implies a mode in which two planks are joined together with bevelled ends.. The same as *Mitred.*

T PLATES, in shipbuilding, are plates of iron in the form of the letter T; they are used for various purposes.

TABLING, in shipbuilding, letting one piece of timber into another by alternate recessess and projections on each, to prevent the pieces from drawing asunder or slipping upon one another. See also *Dowells.*

TACK. To put a vessel about, that is, to change her course from one board to another by bringing her head up to the wind, putting the helm a-lee, till the wind bear upon the sails on the opposite side of the ship, so that the side which before was the lee side now becomes the weather side.

See *Stay* and *Wear.*

The term *Tacking* is also applied generally to the act of *Beating to Windward.*

TACK. The rope or chain by which the weather clew of a course is hauled forward and down to the deck.

The tack of a fore and aft sail, is the rope which keeps

down its lower forward clue; and *of a studding sail,* that which keeps down its lower outer clue. The tack of a lower studding-sail is called the *Out-haul.*

"When a vessel is close-hauled, the tacks are hauled forward on the weather side, in which case those tacks are said to be *aboard.* When close-hauled with the wind on the right hand, she has her *starboard-tacks aboard,* and is said to sail *on the starboard tack;* if the wind be on the left hand, she has her *larboard tacks aboard,* and is said to sail *on the larboard* (or '*port*') *tack.*" *(Norie's Epitome of Navigation).*

Tack also signifies that part of a sail to which the tack is attached.

See *Sheet.*

TACKLE. A purchase formed by a rope rove through two or more blocks. That part of the rope which is made fast to the strop of one of the blocks is called the *standing part;* the part hauled upon is termed the *fall;* and the rest are called *running* or *leading* parts. See also *Ground-tackle.*

FISH-TACKLE. See *Fish the Anchor.*

GUN-TACKLE PURCHASE. This is formed by a rope rove through two single blocks, the standing part being made fast to the strop of the fixed block.

LUFF-TACKLE PURCHASE. See *Luff.*

REEF-TACKLE. } See these articles respectively.
STAY-TACKLE. }

TOP BURTON TACKLE. See *Burton.*

TRAIN-TACKLES. See that article.

WATCH-TACKLE, *Half-Watch Tackle,* or *Tail-Tackle.* A luff-tackle purchase with a hook in the end of the single block and a tail to the upper end of the double block. One of these purchases, with a short fall, is kept on deck at hand, in order to clap upon standing or running rigging when required, to get a strain on ropes such as the topsail sheets and halyards, &c.

TACKLE-FALL. See explanation of *Tackle.*

TACKSPINS, or BELAYING-PINS. See *Pins.*

TAFFRAIL or TAFF-FAREL-RAIL. See *Rail.*

TAIL. A rope spliced into the end of a block, used for

making it fast to rigging, spars, &c. Such a block is called a *Tail-Block.*

A ship is said to *tail up* or *down the stream* when at anchor in a river, according as her stern swings up or down the river by the influence of the tide.

(*Dana's Seaman's Manual).*

TAIL ON ! or *Tally on !* An order to take hold of a rope and to pull. *(Dana).*

TAIL-TACKLE, or WATCH-TACKLE. See *Tackle.*

TAIL-VALVE or SNIFTING-VALVE. See description of *Steam-Engine,* Sect. 13.

TANKS or WATER-TANKS. Cisterns made of malleable iron plates, for keeping a stock of water; they are formed of such shapes as to fit into those parts of the ship where they are to be placed, without occupying much space.

TAR. A liquid gum taken from pine or fir trees, and prepared by boiling. With this the ropes whereof a vessel's rigging is composed are saturated; and it is used for various other purposes. A coating of tar is always laid on under wood or copper sheathing: if the vessel be not sheathed, *coal-tar* is usually employed for paying her bottom because it dries sooner and makes a smoother surface; but vegetable tar is better calculated for preserving the timber.

TARPAULING or TARPAULIN. A piece of canvass daubed with tar; used to cover the hatches of a vessel at sea in order to prevent water from getting in at the seams, and for other purposes.

TAUGHT, or TAUT. A term generally used for *tight,* when applied to a rope or chain.

TAUNT. High or tall, commonly applied to masts.

All-a-taunto, is a phrase denoting that a vessel is fully rigged out, with all her upper masts and yards aloft.

TAUT. [TAUGHT].

TEAMING-PUNCH. See *Punch.*

TELEGRAPH. A machine or contrivance for communicating intelligence at a distance by means of signals agreed on to represent certain letters, words, or ideas. Mr Watson's Code of Signals (which like that of Captain Marryat, is in-

tended generally for the use of ships at sea) is adapted for exchanging communications with vessels arriving off or passing the chief headlands around the coasts of the United Kingdom, &c., by means of telegraphs, which are established at these points. The telegraph stations here alluded to are as follows:—

HOME STATIONS.		FOREIGN STATIONS.
Scrabster Roads	Pentland Firth	Barbadoes
Skerza Head		Bermuda
Peterhead		Cape of Good Hope
Flambro' Head		Ceylon
Spurn to Hull		Corfu
Yarmouth		Gibraltar
Orfordness		Jamaica
North Foreland		Malta
Downs to London		Mauritius
Needles	to Southampton	New South Wales
St Catherine's, Isle of Wight		Nova Scotia
		Quebec
Start to Dartmouth		St Helena
Old Head of Kinsale		Sierra Leone
Donaghadee		&c.
Cutter cruising between Cape Clear and Old Head of Kinsale		

TELESCOPE. A well known optical instrument for observing distant objects: there are two kinds, the reflecting and the refracting telescopes, the latter of which is best suited for observing the heavenly bodies. *(Squire's Grammar of Astronomy).*

TELL-TALE. A pointer connected with the steering apparatus, for the purpose of indicating the position of the helm at any time.

Also, a name given to a *Hanging-Compass.*

TEND. "To watch a vessel at anchor, at the turn of tides, and cast her by the helm, and some sail if necessary, so as to keep turns out of her cable." *(Dana's Seaman's Manual).*

The term *tending* also implies the movement itself by

which a vessel swings round her anchors in a tideway at the turn of the tide.

TENDER. A small vessel employed in the service of Government to attend on ships of war, and on squadrons of them, in order to carry orders or intelligence from one place to another, to convey volunteers and impressed men, &c.

TENON. The end of one piece of timber diminished and made square so as to fit into a corresponding hole called the *Mortice* in another piece, for the purpose of joining the two pieces together. The pieces are said to be *tenoned* into each other: thus, the stern-post is tenoned into the keel.

A tenon is made on the heel of a lower mast to fit into the step.

TESTING *a chain cable:* trying its strength by a machine which strains it with a force greater than the absolute strength of the rope cable it is intended to supersede. This is usually done in the workshop by means of a hydraulic machine.

THERMOMETER. A well known instrument for measuring the temperature of the air or of any matter; formed on the principle that the expansion and contraction of certain substances (such as mercury) are proportional to the increase and diminution of heat. This instrument is of much use at sea in indicating the near approach to land, shoals, icebergs, &c.

M. Clement has invented an instrument of this kind, called a *Sub-Marine Thermometer*, which is peculiarly suitable for the last mentioned purpose: it is formed of platina and silver, and being placed at a depth of about ten feet below the surface of the water, it shews with great delicacy, by means of a dial on deck, any change in the temperature of the sea, *(Practical Mechanic and Engineer's Magazine)*.

THICKSTUFF. A name for plank when above four inches in thickness.

THIMBLE. An iron ring having its rim concave on the outside for a rope, or the strop of a block, or the cringle of a sail, to fit snugly round, and prevent a hook from chafing it. Thimbles are also used for other similar purposes.

THOLE-PINS, or THOLES. See *Row-locks.*

THORO'PUT. This term is generally used to imply the parts of a fall not leading fair but crossing each other; a turn of one of the blocks in the proper direction *takes out the thoro'put.*

THROAT. *The inner end of a gaff,* where it widens and hollows in to fit the mast. *The central part of the hollow of a Breast-hook, Transom,* or *piece of Knee-timber:* we may notice that the bolt through the throat of a breast-hook, or of a transom, is always driven from the inside.

See also description of *Anchor.*

THROAT-BOLTS. Bolts fixed in the lower part of the main-top and the end of the gaff, for hooking the throat halyards to. In sloops and schooners, the throat-bolts are fastened through the mast above the cross-trees, and each bolt has a spur on its lower part to prevent the neck being broken by the up and down strain.

THROAT-BRAILS, are those for brailing up a sail to the throat of a gaff.

THROAT-HALYARDS. See *Halyards* and *Throat-bolts.*

THROTTLE-VALVE. See description of *Steam-Engine,* Sect. 7.

THRUM. To stick short strands of yarn through a mat or piece of canvass in order to make a rough surface: this forms what is called a *thrummed mat,* which is used about a vessel's rigging at any part to prevent chafing.

THWARTS. The seats across a boat upon which the oarsmen sit: they are secured to the boat's sides by means of small knees either of wood or iron in order to bind her together.

THWARTSHIPS. [ATHWARTSHIPS].

TIDES. The alternate rising and falling which take place in the waters of the sea, generally twice in the course of a lunar day—that is, in 24 hours 9 minutes of mean solar time, throughout the greater part of the ocean, and of the gulfs, bays, firths, and rivers which communicate freely with it.

These tides form what are called a *flood* and an *ebb,* a *high* and *low water:* the whole interval between high and

low water is also called a *tide*: the water is said to *flow* and *ebb*: and the rising tide is called the *flood-tide*, and the falling, the *ebb-tide*. The line made by the tide upon the shore when at its greatest height is termed *high water-mark*, or *flood-mark*.

The cause of tides is the attraction of the sun and moon, chiefly that of the latter object: they differ at different places, and are subject to periodical variations every where; these varying heights of tide succeed each other in a regular series, alternately diminishing and increasing; the greatest is termed a *spring-tide*, and the least, a *neap-tide*; each series is completed in somewhere about fifteen days.

These last mentioned effects are regulated by the varying relative positions of the sun and moon. At new moon, when it is in conjunction with the sun, the tides are raised by their joint attraction, which occasions the highest *spring-tides*. When they are in opposition, each raises the tides opposite to it, and this, in like manner, occasions spring-tides. But at the quarters, the sun tends to raise the tides where the moon would depress them, and to depress them where they would be raised by the moon, which produces *neap-tides*. When the moon is in *perigee*—that is, at her nearest distance from the earth, she raises the tides most: the contrary happens when she is in *apogee*.

The tides in high latitudes generally rise and fall more than those in low latitudes.

Although in most places the tide flows twice every twenty-four hours, Mr Horsburgh remarks that this is not universally the case, for amongst several of the eastern islands within the Tropics, it flows only once in twenty-four hours; the passage of the moon over the meridian of any place commonly makes high water there, but in some places the tide is highest when the moon is in or near the horizon; in many places, also, beyond the Tropics the tide flows only once in twenty four hours, particularly on the southern coast of Van Dieman's Land; while at Port Dalrymple on the north coast of that island the tide flows twice in twenty-four hours.

(*Encyclopaedia Britannica. Norie's Epitome of Navi-*

gation and Nautical Astronomy. Horsburgh's India Directory).

TIDE-GATE. See *Tide-Way.*

TIDE-HARBOUR, or TIDAL HARBOUR. See *Tide.*

TIDE-RODE. The situation of a vessel at anchor when she is swung round by the force of the tide, and rides with her head to it: if swung by the force of the wind, she is said to be *wind-rode.*

TIDE-WAY, or TIDE-GATE. A channel wherein the tide runs strong.

TIE. [TYE].

TIER. A row of any thing, as of shores, of ships, of guns, &c. A range of casks. Also, "the range of the fakes of a cable or hawser." See *Ground-Tier.*

The Cable-Tier is the place in the ship's hold, or between decks, where the cables are stowed. (*Dana's Seaman's Manual*).

TIGHT. A ship or boat is said to be tight, when so compact in every respect as to prevent the admission of water: the reverse of *leaky.*

TILLER. A bar of wood or iron fitted into the head of a rudder, as a lever to turn the rudder in steering.

The extremity of it, to which the tiller rope or chain is attached, is called the *tiller-head.*

TILLER-ROPE. See *Wheel-ropes.*

TIMBERS. A general name for the pieces of timber which compose the frame of a vessel. See *Floor-Timbers, Frames,* and *Futtocks.*

BOW-TIMBERS. The timbers that form the bow of the ship. (Plate II. fig. 7.)

COUNTER-TIMBERS. The timbers wrought into a vessel's counter; consisting of the short stern-timbers, and the lower parts of the long stern-timbers.

CROSS-TIMBERS, or *Cross-Pieces.* Short timbers laid across the keel of a heavy ship of war, and scarphed to the lower ends of the first futtocks, whereby a greater degree of strength is obtained: they are not common in ships built for the merchant service.

FASHION-TIMBERS. See *Fashion-Pieces.*

FILLING-IN-TIMBERS. See *Frames.*

FLOOR-TIMBERS. See *Floor.*

HALF-TIMBERS. The short timbers (or futtocks) in the cant bodies: they are placed so as to give good shiftings.

HAWSE-TIMBERS. See *Hawse.*

QUARTER-TIMBERS. The framing timbers in a vessel's quarters.

STERN-TIMBERS. A general name given to all the timbers in the stern-frame. *The long stern-timbers* extend from the wing-transom up to the taffrail: *the short stern-timbers* from the wing-transom to the arch-board or to the name-board. (Plate II. fig. 5.)

TOP-TIMBERS. See *Futtocks.*

TIMBER-HEADS. The ends of the timbers, which come above the decks: they are used for belaying ropes to.

TIMBER-AND-ROOM, *Room-and-Timber, Room-and-Space,* or *Berth-and-Space,* in shipbuilding, the distance from the moulding edge of one timber to the moulding edge of the timber next to it.

TIMENOGUY, in a ship of war, a rope rove through a thimble on the clue of the mainsail or foresail, and carried fore-and-aft outside of the rigging, as a guy to clear the clues from the rigging; or seized for the like purpose to a cleat attached to the foremost swifter or shroud on each side, to keep the tacks and sheets up, in working the ship; or made fast to the stock of the waist-anchor to keep the tacks and sheets from fouling on the stock.

TIMONEER. A name given to the helmsman.

TOGGLE. A pin used for inserting through the bight or eye of a rope, or of the strop of a purchase block, or through the eye of a bolt to which some leading block is secured, in order to fix it in its place, or through the eyes of two ropes to connect them together. Toggles are also used for making fast the small chain which connects the jib sheet, or the foresail sheet with the corner of the sail in small craft; and pins of a similar description are generally welded by the middle to the end of raft-chains.

TOMAHAWK, or POLE-AXE. A weapon somewhat resembling an axe, carried by boarders in a ship of war. It is also used in merchant vessels for cutting away the wreck of masts and rigging, &c., when an accident occurs.

TOMPION. A piece of wood put into the muzzle of a gun to prevent the admission of water. A lanyard is attached to it, and to a wad which is driven firmly into the piece before putting in the tompion. A fire-swab, also, which is made of rope-yarns, is commonly secured to the tompion; and is saturated with water to wet the gun, in order to cool it, and clear away any particles of powder, &c.

TONGUE. A long tapered end of one piece of timber fitted like a tenon into the end of another piece, which is forked to receive it. The pieces are secured by bolts and hoops binding them together. The operation is called *tonguing*; its most common application is for the purpose of lengthening masts.

TONNAGE. The cubical contents of a ship or vessel reduced into tons. See the article *Burden*.

New vessels are commonly understood to be sold according to the old measurement of tonnage unless otherwise stipulated.

The old mode of ascertaining the tonnage of vessels for registry was as follows:—"From the length of the keel for tonnage (which is understood to include the fore rake) deduct three-fifths of the main breadth; multiply the remainder by the breadth and half breadth, and divide the product by 94; which will give the number of register tons."

The following is the rule by which the tonnage of vessels is now to be ascertained under the Act 8 and 9 Vict., c. 89., which tonnage or burden so ascertained is to be inserted in the certificate of the ship's registry.

"Previous to any vessel being registered, her tonnage is to be measured and ascertained while her hold is clear, and according to the following rule:—Divide the length of the upper deck between the after part of the stem and the fore part of the stern-post into six equal parts. *Depths:* At the foremost, the middle, and the aftermost of these points of division, measure in feet and decimal parts of a foot the depths from

the under side of the upper deck to the ceiling at the limber-strake. In the case of a break in the upper deck, the depths are to be measured from a line stretched in a continuation of the deck. *Breadths:* Divide each of those three depths into five equal parts, and measure the inside breadths at the following points—viz., at one-fifth and at four-fifths from the upper deck of the foremost and aftermost depths, and at two-fifths and four-fifths from the upper deck of the midship depth. *Length:* At half the midship depth, measure the length of the vessel from the after part of the stem to the fore part of the stern-post: then, to twice the midship depth add the foremost and the aftermost depths, for the sum of the depths; add together the upper and lower breadths at the foremost division, three times the upper breadth, and the lower breadth, at the midship division, and the upper and twice the lower breadth at the after division, for the sum of the breadths; then multiply the sum of the depths by the sum of the breadths, and this product by the length, and divide the final product by *three thousand five hundred,* which will give the number of tons for register. If the vessel have a poop or half deck, or a break in the upper deck, measure the inside mean length, breadth, and height of such part thereof as may be included within the bulkhead; multiply these three measurements together, and dividing the product by 92.4, the quotient will be the number of tons to be added to the result as above found. In order to ascertain the tonnage of open vessels, the depths are to be measured from the upper edge of the upper strake."

Tonnage of Steam Vessels. "In each of the several rules above prescribed, when applied for the purpose of ascertaining the tonnage of any ship or vessel propelled by *steam,* the tonnage due to the cubical contents of the engine room shall be deducted from the total tonnage of the vessel as determined by either of the rules aforesaid, and the remainder shall be deemed the true register tonnage of the said ship or vessel. The tonnage due to the cubical contents of the engine room shall be determined in the following manner; that is to say, measure the inside length of the

engine-room in feet and decimal parts of a foot from the foremost to the aftermost bulkhead, then multiply the said length by the depth of the ship or vessel at the midship division as aforesaid, and the product by the inside breadth at the same division at two-fifths of the depth from the deck taken as aforesaid, and divide the last product by 92.4, and the quotient shall be deemed the tonnage due to the cubical contents of the engine-room.

" The tonnage due to the cubical contents of the engine-room, and also the length of the engine-room, shall be set forth in the certificate of registry as part of the description of the ship or vessel; and any alteration of such tonnage due to the cubical contents of the engine-room or of such length of the engine-room, after registry, shall be deemed to be an alteration requiring registry *de novo* within the meaning of this Act."

" For the purpose of ascertaining the tonnage of all ships, as there shall be occasion to measure *while their cargoes are on board,* the following rule shall be observed: that is to say, measure, first, the length on the upper deck between the after part of the stem and the fore part of the stern-post; secondly, the inside breadth on the under side of the upper deck at the middle point of the length; and thirdly, the depth from the under side of the upper deck down the pump-well to the skin; multiply these three dimensions together, and divide the product by 130, and the quotient will be the amount of the register tonnages of such ships; if the vessel have a poop, or half deck, or a break in the upper deck, measure the inside mean length, breadth, and height of such part thereof as may be included within the bulkhead, multiply these three measurements together, and dividing the product by ninety-two and four-tenths, the quotient will be the number of tons to be added to the result above found."

It is further provided by the statute above quoted, that " the true amount of the register tonnage of every ship or vessel required by law to be registered according to the rule by this act established, shall be deeply carved or cut in figures of at least three inches in length on the main beam of every such ship or vessel, prior to her being registered."

TOP. A platform placed over the head of a lower mast in a square-rigged vessel, resting on the trestle-trees, to spread the rigging, and for the convenience of men aloft. The tops are named, after the respective masts to which they belong, *main, fore,* and *mizen tops.* (Plate III.) See *Top-Armour, Top-Lining,* and *Top-Rim.*

TO TOP UP *a yard* or *a boom,* &c., means to raise one end of it by hoisting on the lift. See *Topping-Lift.*

TOP AND BUTT, in shipbuilding, a method of working planks cut out of long tapering trees by laying their broad and narrow ends alternately fore and aft, lining a piece off every broad end the whole length of the shifting. By this method every other seam produces a fair edge: it is adopted principally for ceiling. See *Butt,* and *Touch.*

TOP-ARMOUR. An ornamented board fitted to the after part of a vessel's top, covering in the ends of the trestle-trees, the top-rim, &c.

TOP-BLOCK. See *Mast-Rope.*

TOP-BURTON-TACKLE. See *Burton.*

TOP-GALLANT MASTS and SAILS. See *Mast.*

TOP-HAMPER. Any unnecessary weight, either aloft or about the topsides or upper decks.

TOP-LIGHT. A signal-lantern carried in a vessel's top.

TOP-LINING. A platform of thin board nailed upon the upper part of the cross-trees on a vessel's top. See also *Lining.*

TOP-MAUL. See *Maul.*

TOP-MAST. The second mast above the deck, next above the lower mast,—main, fore, or mizen.

TOP-RIM. A thin piece of board bent round a vessel's top, giving it a finish, and covering in the ends of the cross-trees and trestle-trees so as to prevent the topsail from being chafed.

TOP-ROPE. See *Mast-Rope.*

TOP-SAIL. The second sail above the deck on any mast. See *Gaff-topsail.*

Topsail Sheet Bitts are pieces of timber used for belaying the topsail sheets to. Those for the *fore-topsail*

sheets are let down into the deck before the foremast. The gallows-stanchions, or sometimes the fife-rail stanchions, serve as bitts for the *main-topsail sheets*. The *mizen-topsail sheets* are belayed to a cleat on the mast: this is likewise the case in most small vessels, with the fore-topsail sheets, which pass through the eye of an iron hook fixed through the deck. See also *Partners*.

TOP-SIDES. That part of a vessel's sides which is above the wales. See *Strake*.

TOP-TIMBERS. See *Futtocks*.

Top-Timber-Line. See *Shipbuilding*.

TOPPING-LIFT. A rope used for topping up the end of a main, spanker, or swinging boom. (Plate III.)

Davit-Topping-Lift. A rope made fast to the outer end of a davit, and rove through a block made fast to a vessel's mast aloft, with a tackle attached. Such lifts are generally employed for the davits of anchors, to assist in keeping the anchor clear of the rail when bringing it "in board" to be stowed on deck.

TOSS *an oar*: "to throw it out of the row-lock, raise it perpendicularly on its end, and lay it down in the boat with its blade forward." (*Dana's Seaman's Manual.*)

TOT. A name for a small measure, made of wood or bone, used in some ships for serving out the seamen's grog.

TOUCH, in shipbuilding, the broadest part of a plank worked either top-and-butt or anchor-stock.

A sail is said to touch, when the wind strikes the leach so as to shake it a little. Hence, "*Luff and Touch her!*" is an order to bring the ship's head up to the wind until the sails shake: this is done either to give facility when lowering sails in order to reef, &c., or for the purpose of stopping the ship's way.

A vessel is said to touch at any port or place, when she stops or anchors at it in the course of a voyage. See the article *Deviation*.

TOW. To draw a vessel along by means of a rope attached to another ship or boat.

Tow-Line. A water-laid rope of a size between the hawser

and the largest warp: it is used in cases where the latter may be of insufficient strength.

Tow-Rope. Any rope used for towing.

TOWING-TIMBER, or Towing-Post. A substantial piece of timber inserted through the deck of a steam vessel, for the purpose of making fast a tow-rope when required.

TRACE UP, or Trice up. To haul up any thing and make it fast as a temporary security.

TRACING-LINE, or Fancy Line. A line attached to the topmost backstays and the lower standing rigging, in order to keep these backstays steady.

TRACK. To haul a vessel along (more particularly in a narrow river or canal), by means of a rope carried on shore.

The line of a ship's course in the water is called her *track*.

TRADE-WINDS. A name given to certain regular winds which blow within or near the Tropics, more especially in the open parts of the Pacific and Atlantic Oceans.

Although the chief region of these winds is between 23½ degrees north, and 23½ degrees south latitude, yet "in some parts of the world they extend to latitude 28° both N. and S. of the equator, while at other places well within the tropics, and even close to the line, totally different winds prevail."

The trade-winds are distinguished into the N.E. trade-wind which blows on the north side of the equator, and the S.E. trade-wind which blows on the south side of the equator. "In point of fact, however, they seldom blow directly from N.E. and S.E.; the only general assertion with respect to them, which can safely be made, is, that they blow more or less from the eastern towards the western half of the compass," and they vary in their direction and strength at different seasons. The southern margin of the N.E. trade-wind "varies considerably with the season of the year; from December to May inclusive, it frequently reaches so far as the 3d degree of north latitude, though it ranges about 5° and 6° north; from June to November it is shifted back as far sometimes as 13° north, and seldom extends as far south as

8° north latitude." From January to May, the northern limit of the S.E. trade-wind is about 1° or 2° north latitude; in summer and autumn it is a degree or two still further to the northward of the line.

At the tropical borders of both trades, they are found to blow very nearly from the E. point. At their equatorial limits—that is to say, at the southern margin of the N. E. trade-wind, and the northern margin of the S. E. trade-wind, they blow directly from the N. and S. respectively: the meeting of the two opposite currents here produces the intermediate space called the *calms* or *variables;* in this region southerly and south-westerly winds, or, according to Mr Horsburgh's account, winds from the westward, mostly prevail. It varies in width from 150 to more than 500 miles, being widest in September, and narrowest in December or January: in this region, calms, southerly breezes, and sometimes violent squalls are met with, the laws of which are not so readily understood as those of the trade-winds, and are consequently not so easily allowed for in the practice of navigation.

The above account of trade-winds is extracted from the second series of "*Fragments of Voyages and Travels*" *by Captain Basil Hall,* who therein refers to *Horsburgh's India Directory* and *Professor Daniell's Meteorological Essays* as the best authorities on such subjects.

In the Introduction to his *India Directory,* Captain Horsburgh mentions that trade-winds are constant only in the ocean at a considerable distance from land.

TRADER. A vessel employed regularly in any particular trade, whether foreign or coasting.

TRAILBOARDS, in shipbuilding, ornamented boards between the cheek-knees at the heel of the figure. See *Head-rails.*

TRAIN-TACKLES. The tackles used on board a vessel for running guns in and out; for this purpose luff-tackles are used, one on each side of the gun, the double block being hooked to an eye-bolt in the rear of the gun-carriage, and the single block to a ring-bolt in the deck; by "choking the

luff," they also serve to prevent the gun from running out and jamming the men while loading it.

TRANSOMS, in shipbuilding, beams of wood fitted horizontally between the fashion-pieces, and bolted to the fore part of the stern-post. The uppermost of them, which is the longest, is termed the *main-transom* or *wing-transom*. The whole of these connected together compose what is called the stern-frame of the ship. (Plate II. fig. 5.)

It is important to notice that the efficiency of transoms in binding the ship's sides together depends much upon their length: a vessel with short transoms in her stern-frame would, therefore, require to be the more carefully strengthened inside by pointers and crutches.

TRANSOM-KNEES. Knees which have one arm applied to either end of a transom, and the other running diagonally along, and bolted to the ship's side. They serve as an important binding. In order to take up less space in the cabin, they are often made of iron. (Plate II. fig. 5.)

TRANSPORT (pronounced transpórt). To move a vessel along from one place to another, either by warping or by towing.

TRANSPORTS (pronounced tránsports). Merchantmen hired, or ships of war employed, by the Admiralty for the conveyance of troops, naval stores, ammunition, &c.

Of the various denominations of ships in the tránsport service—*Cartel-ships*, are such as are employed for conveying and exchanging prisoners; they are generally old ships of war: *Convict-ships*, are those employed for carrying convicts: *Naval Store ships*, are for the conveyance of stores and ordnance to the dock-yards and arsenals at different stations abroad; for which purpose ships of war are exclusively employed: *Troop-ships*, are intended chiefly for conveying cavalry and their horses.

TRANSVERSE SECTION. See *Section*.

TRAVELLER. An iron ring fitted to run out and in on a boom or gaff, for the purpose of extending and taking in the outer corner of the sail.

The Fore-sheet Traveller is a ring of the same description.

which traverses on the fore-sheet horse. See *Horse (Fore-sheet)*.

The Jib-Traveller of a sloop traverses on the bowsprit; that of a fore-and-aft schooner, or of a square rigged vessel, (both of which have standing bowsprits), traverses on the jib-boom. When taking in the jib, it is important to ease it in by means of the traveller, so that it may be stowed with greater facility than on the boom end, as the stowing of this sail may be otherwise attended with danger unless it is furnished with brails.

TRAVERSE. See *Sailing (Traverse)*.

TRAVERSE-HORSES. See *Jackstays*.

TREENAILS. Cylindrical pins (generally made of oak or Dantzic fir) driven through the sides and bottom of a vessel in order to secure and bind her planking and timbers together; to assist in preventing the treenail from starting either way, a four cornered pin of hard wood with a sharp point (called a *treenail-plug*) is then driven into its outer end, and a wooden *wedge* of hard wood into its inner end. Iron bolts are sometimes used in preference to treenails for the topsides and wales, because the planks are apt to rot, should any bad treenails happen to be employed. In the parts below water good treenails are preferable, on account of the tendency of iron to corrode. By a recent regulation of *Lloyd's Register of British and Foreign Shipping*, every vessel which would rank ten years A1 or upwards, is entitled to an extension of two years on that class, if fastened with copper or yellow metal bolts to the exclusion of treenails.

Treenail-Plug and Treenail-Wedge. See *Treenails*.

TREND. See description of *Anchor*.

TRESTLE-TREES, or Trussel-Trees. Two strong pieces of timber placed horizontally and fore-and-aft on opposite sides of a mast-head, to support the cross-trees and top, and also for the fid of the mast above to rest upon. (Dana's "*Seaman's Manual*" and "*Two Years before the Mast.*")

TRICE [Trace).

TRICK. The time allotted to a man to stand at the helm; which is commonly two hours.

TRIGGER, in shipbuilding, a kind of iron dog fastened to the bilgeways and sliding planks as a holdfast. After the dog-shores have been knocked off, it is driven out, to allow the vessel to descend.

TRIM *of a vessel:* the proper disposition of the weight which she carries. When there is only ballast on board, she is said to be *in ballast-trim.*

A vessel is said *to be trimmed* by the head, or by the stern, respectively, when the weight is so disposed as to make her draw more water towards the head than towards the stern, or the reverse.

To trim, also signifies to arrange the sails by the braces, &c., with reference to the wind: and the sails are said to be trimmed to the course which is to be shaped. *To trim sharp upon a wind,* is to adjust the sails so that the ship may keep as close to the wind as possible.

TRIP *an Anchor;* to raise it clear of the bottom: the anchor is then said to be *a-trip.*

A tripping line, is a line used for tripping an upper mast, that is, for starting it from the fid in order that it may be lowered by means of the mast-rope.

There are also *tripping lines* used on board ships of war, for hauling the lifts and braces off the yard-arms, preparatory to sending down a top-gallant or royal yard.

TROPICS. Two lesser circles of the sphere parallel to the equinoctial, and 23° 28′ distant from it, being the limits of the sun's greatest declination north and south. That in the northern hemisphere is called the tropic of *Cancer,* and that in the southern hemisphere the tropic of *Capricorn*—so termed because they touch the ecliptic at the beginning of these constellations or signs of the zodiac. (*Squire's Grammar of Astronomy—Norie's Epitome.*)

TROUGH *of the Sea.* The hollow formed between two waves. A vessel when lying in the trough of the sea, is in the greatest danger of being struck by a wave. When lying to, she is often exposed to being brought into this position by

some sudden shift; it then becomes necessary to embrace the first opportunity of wearing the ship round in order to bring her on the other tack.

TRUCK. A circular piece of wood fixed on the head of each of a ship's highest masts, with small holes or sheaves in it for signal halyards to be rove through. Also, the wheel of a gun carriage. (*Dana's Seaman's Manual.*)

SHROUD-TRUCKS. Small pieces of wood with holes in them, but no sheaves, seized on the shrouds as fairleaders for the running rigging.

TRUNDLEHEAD. See *Drumhead.*

TRUNNIONS. The two knobs or arms which project from the opposite sides of a gun, serving to support it on the cheeks of the carriage, and on which, as an axis, it is elevated or depressed.

TRUSS. The rope by which the centre of a lower yard is kept in towards the mast; there are small tackles attached, so that it may be slacked off or hauled taut at pleasure. In most merchant vessels, *iron* trusses are now used, having a joint which allows the yard to move in any direction.

Truss also signifies an ornamental bracket fixed on the stern of some vessels, to support the carved work on the stern windows.

This term is also applied to the *Truss-pieces* used in the system of diagonal trussing.

To truss up a sail, is a term sometimes applied to brailing it up.

TRUSS-HOOPS. The hoops round a yard, and also round the mast, to which an iron truss is fixed.

TRUSS-PARREL. That part of a rope truss which goes round the yard.

TRUSS-PENDANT. That part of a rope truss to which the truss tackles are hooked.

TRUSS-PIECE, or TRUSS. See *Trussing (Diagonal).*

TRUSSING (Diagonal), in shipbuilding, a particular method of binding and strengthening a vessel internally: the system introduced by Sir Robert Seppings, of which a full description is quoted in Mr Creuze's "*Treatise on Naval*

Architecture," consisted of a series of timbers, called *riders,* laid diagonally on the framing from one end of the ship to the other, along with pieces of timber placed in a fore-and-aft direction over the joints of the frame-timbers at the floor-heads, and 1st futtock heads, having their ends coaked or dowelled to the sides of the diagonal riders, while into each compartment formed by this frame-work in the hold a piece of wood, called a *truss-piece* or *truss*, was introduced, with an inclination opposite to that of the riders, thereby dividing it into two parts. Mr Creuze describes a modification of the system of diagonal trussing which is now adopted for her Majesty's ships, consisting of two ranges of iron riders or braces bolted securely through the ship's bottom; the lower range is brought upon the inside of the frame, and the ceiling worked and scored over them, the upper ends of this range extending forward in the fore body and aft in the after body of the vessel, and the direction of the upper range crossing that of the lower range at right angles. This latter method seems applicable to merchantmen, whether sailing vessels or steamers, wherein space can ill be afforded. Planks bolted in a similar manner diagonally over the ceiling form an efficient binding well suited for merchant vessels.

TRUSSEL-TREES. [TRESTLE-TREES).

TRYSAIL. A fore-and-aft sail set with a boom and gaff, and hoisting on a lower mast, or on a small mast called the *trysail mast* close abaft that mast. This name is generally confined to the sail so carried at the main-mast of a full rigged brig or snow; that which is carried at the fore-mast or main-mast of a ship or barque, or at the fore-mast of a brig or schooner, being called a *spencer,* and that which is set on the mizen-mast of a ship or barque, a *spanker* or *driver*. See *Brig*.

Trysail is also the name given to a sail set on a fore-and-aft rigged vessel (on the main-mast if a two-masted vessel), hoisted by a gaff, but having no boom at its lower edge; this is used only in bad weather as a *storm trysail*. A piece of rope or iron going across the stern is used in some vessels for the storm trysail sheet block traversing upon, and gets the name of the *trysail-sheet horse*.

TUBULAR BOILER. See description of *Steam-Engine*, Sect. 37.

TUCK, in shipbuilding, the after part of the ship where the ends of the planks of the bottom are terminated by a moulding wrought across the counter, termed the *counter-rail*, *tuck-rail*, or *tuck-moulding*.

When the after part of the ship terminates in a straight plane which is nearly vertical, instead of the plank running up to the counter, she is said to have a *square tuck*.

TUG. See *Steam-Tug*.

TUMBLE-HOME, TUMBLING-HOME, or TUMBLING-IN. The inward curve on a vessel's topsides. The opposite of *flaring out*.

TURK'S HEAD. A certain species of ornamental knot: it is sometimes wrought on man-ropes. As already noticed, descriptions and illustrations of the various kinds of knots are somewhat fully given in *Dana's Seaman's Manual*.

TURN. *To take a turn of a rope*, means to fasten it by passing it round any thing. See *Round-turn* and *Hawse*.

TURN IN. The ends of a vessel's shrouds carried round the dead-eyes, and laid back in order to be fastened by seizings, are said to be *turned in*.

We also use the terms *turn in* and *turn out* with reference to men going to rest in and quitting a berth or hammock.

TURN UP! The order given to send the men up from between decks.

TURNING *to Windward*. The same as *Beating to Windward*.

TWIDDLING-LINE. A piece of small rope, sometimes secured to an eye-bolt on deck and brought round one of the spokes on each side of the steering-wheel, in order to steady it when required.

TWO-BLOCKS. See *Chock-a-block*.

TYE or TIE. A rope or chain attached to the middle of a yard, going through a sheave-hole at the top of the mast, and having a block made fast to its outer end for the

halyards to be rove through. This is used for hoisting and lowering any upper yard. See *Slings*.

JIB-TYE. A tye rove through a sheave or block on the topmost head, for hoisting the jib.

PEAK-TYE. See *Peak*.

TYPHOONS, or more properly TY-FOONGS. Dangerous tempests which are liable to happen in the Chinese seas. They blow with greatest fury near land, and seldom reach further south than fourteen degrees north latitude. They frequently commence without giving much indication of their proximity, and a series of fine weather and calms is apt to be succeeded by a Tyfoong. Marine barometers or sympiesometers seem to afford the best means of anticipating these tempests. From December to May tyfoongs seldom or never occur. The remainder of the year is subject to them; and the most violent of these seem, of late years, to have been experienced in the months of June and July, and about the equinox in September. (*Horsburgh's India Directory.*)

UN-BEND. To cast off or untie. Thus, to unbend the sails is to loose and cast them off from the yards, booms, or stays.

UN-FURL.
UN-MOOR.
UN-REEVE.
UN-RIG.
} respectively imply the reverse of *Furl*, *Moor*, *Reeve*, and *Rig*.

UN-SHIP. See *Ship*.

UNDER-BEVEL. See *Bevelled*.

UNDER FOOT. When an anchor is dropped from a vessel which has head-way, the anchor is said to be *let go under foot*.

UNDER-RUN *a warp*: to run a boat along underneath it, in order to clear it if any part of it below water be foul, &c. See "Weigh" under the article *Anchor*.

UNDER SAIL, implies that a vessel is in motion with her sails set.

UNDER WEIGH or "UNDER WAY." A vessel is *under weigh*, after she has weighed anchor or left her moorings.

UNDERWRITER. See *Insurance (Marine)*.

UNION. The upper inner corner of a British ensign. The rest of the flag is called *the fly*.

Union Down. "The situation of a flag hoisted upside down, bringing the union down instead of up. Used as a signal of distress." *(Dana's Seaman's Manual)*.

Union-Jack. See *Jack*.

UPMAKING, in shipbuilding, pieces of plank or timber piled on each other as a filling up; more especially those placed between the bilge-coads and the ship's bottom, preparatory to launching. See *Slip-piece*.

UPPER-DECK. See *Deck*.

UPPER-WORKS. That part of a vessel's hull which is above the wales.

UVRON. See description of *Awning*.

VALVES. See alphabetical index after description of the *Steam-Engine*.

VANE. A small kind of flag traversing on a spindle, worn at a mast head to shew the direction of the wind.

Dog-Vane. A small vane made of feathers, or of buntine, placed for the above purpose in a position near the deck, so as to be conveniently seen by the quarter-master of a ship of war when conning during the night, or by the helmsman, or the officer on watch in a merchant vessel.

VANG. A rope leading from the peak of the gaff of a fore-and-aft sail to the rail on each side of the vessel; used for steadying the gaff, *(Dana's Seaman's Manual)*. See Plates III. and IV.

VANGEE. See description of *Pump*.

VARIABLES. See *Trade Winds*.

VARIATION. See *Compass* and *Magnetic*.

VEER. To let out. As, "veer away the cable," that is, slack it and let it run out.

To veer a buoy in a ship's wake, means to slack out a rope to which the buoy has been attached, in order to let it go astern, for the purpose of bringing up a boat that has fallen astern, or of picking up a person who has fallen overboard.

The wind is said to veer, when it shifts or changes.

See also *Wear.*

VEER and HAUL. To slack out and haul in a rope alternately.

VENT *of a gun.* The touch-hole, or aperture through which the fire is communicated to the charge.

VENT-BIT. A species of gimblet used for clearing the vent of a gun when choked.

VENT-FIELD. A rectangular piece of the metal raised a little upon a gun; through it the vent is bored.

VENT-PLUG. A tight plug made of leather, plaited rope-yarn, or oakum, which one of the men thrusts into the vent of a gun, pressing upon it with his thumb in order to STOP THE VENT, while sponging the piece and ramming home the charge, so that any spark or fire in the gun may be extinguished. In the practice of gunnery, it is of the utmost importance that this operation be carefully attended to.

VENTILATOR. See *Wind-Sail.*

VERTICAL CIRLES. See *Azimuth Circles.*

VESSEL, may be defined in the words of Dr Johnson, as "any vehicle in which men or goods are carried on water." It perhaps more properly applies to any kind of small ship; but throughout the present Dictionary, whenever ships in general are spoken of, the term *vessel* is used instead of *ship* in any case where it is thought that doubt might arise as to the intended meaning, "*ship*" being, in nautical language, more peculiarly applicable to a vessel with three masts having tops and yards to each.

VICTUALLING-BILL. See *Clearing.*

VICTUALLING-YARDS. See *Dock-Yard.*

WADS are made of junk or rope-yarns, twisted together in a cylindrical shape, or formed like a grommet; they are used to keep the shot home to the cartridge in the breech of a gun. When loaded for immediate firing, there is no wad *between* the shot and the cartridge; but, if loaded merely to be ready for sea service, a wad is also attached to the cartridge in order to let it be drawn without injury, if required.

WAFT, WEFT, or WHIFT. A signal (most frequently for a boat) made by hoisting a flag rolled up lengthways and bound together with a few stops.

WAGES *of Seamen*. See the article *Seamen*.

The statute 8 and 9 Victoriæ, c. 116, for the protection of merchant seamen is omitted to be noticed under that head. The following digest of it has been lately "posted in the form of a placard, at the customhouses, docks, and other conspicuous places in the ports of the United Kingdom, in order that it may fall under the notice of the crews of merchant vessels :"—

"By the 8th and 9th Victoriæ, cap. 116, it is enacted, that no person shall engage or supply seamen to be entered on board any merchant ship, unless he be owner, part owner, master, or ship's husband, or duly licensed by the Board of Trade to ship seamen; and the penalty for violation of this clause is any sum not exceeding £20.

"That no seaman shall sign the ship's articles anywhere but on board the ship," and that any advance note for part of his wages "be given only to the seaman himself, at the expiration of six hours from the time of signing; if such advance be paid in money," it may be so paid "at any period after signing the ship's articles, but only to the seaman himself. The amount advanced contrary to these provisions is null and void, and recoverable as wages at the termination of the voyage, as if no such advance had been paid.

"That no seaman shall give any remuneration whatever, either directly or indirectly, for being provided with a berth; and any person demanding or receiving the same, forfeits a sum not exceeding £5.

"That no person shall remove the property of any seaman from the ship at the expiration of the voyage, excepting with the seaman's consent, and all offenders forfeit the sum of £5.

"That no lodging-house keeper shall receive payment for board and lodging for a longer period than the seaman shall have actually resided in his house; and any lodging-house keeper refusing to return any property to the seaman when

required to do so, shall forfeit and pay a sum of not exceeding £10 above the value of the articles detained.

"Seamen aggrieved should apply to a justice of the peace, who will grant his summons for the appearance of the party complained against, examine the charge, and, if proved, punish the offender according to law."

WAIST. That part of a vessel which is contained between the elevation of the quarter-deck and forecastle, having the upper deck for its base or platform.

When the quarter-deck and forecastle are elevated considerably above the upper-deck, the ship is said to be *deep-waisted*.

WAIST-ANCHOR. A spare bower anchor in a ship of war.

WAIST-BOARDS. The bulwarks made to fit into a vessel's gangway on either side.

WAIST-TREE, or *Rough-Tree*. A spare spar placed along the side of a ship's waist where there happens to be no bulwark, in order to protect persons from falling overboard.

WAISTERS. "Green hands, or broken-down seamen," placed in the waist of a ship of war, to do duty not requiring a knowledge of seamanship.

WAKE. The path or track impressed in the water by a vessel passing through it. A vessel is said to *sail in the wake of another*, when she follows her at a little distance in the same track; and *to cross in the wake of another*, when she crosses the track over which the other has passed.

WALES, or BENDS. The thickest strakes of plank put round the outside of a vessel between the black-strakes. In merchantmen, the wales are always opposite to the hold-beams, at which part it is considered that the ship most requires a defence from external injuries above water; they form very important binding strakes, the fastenings of the hold-beams going through them. (Plate II. fig. 6.)

In a three-decked ship of war, the strakes between the several ranges of ports, commencing from beneath the upper-deck ports, are called the *channel-wale*, the *middle-wale*, and the *main wale;* the strake immediately above the main

wale is called the black-strake; and the uppermost strakes of plank are called the sheer-strakes.

See *Strake.*

WALL-SIDED. A term applied to a vessel's topsides "when the main-breadth is continued very low down and very high up so that they appear straight and upright like a wall." *(Shipwright's Vade Mecum).*

WANE. An imperfection in timber or plank, implying a want of squareness at one or more of its corners; when it has such a deficiency, it gets the name of *wane-wood.*

WARD-ROOM, in a ship of war, the mess room for the lieutenants and other officers. Its position depends on the size and rating of the ship. In some vessels it is in the gun-room.

WARE. [WEAR].

WAREHOUSING (or BONDING) SYSTEM. The establishment of warehouses, under the charge of officers of the customs, in which goods may be deposited, without any duty upon them being exacted, until they be cleared for home use or for exportation. The provisions of the Warehousing Act, 8 and 9 Vict., c. 91, may be seen by reference to the new edition of *Steel's Shipmaster's Assistant,* which was published during the present year, 1846.

WARP. A water-laid rope of smaller diameter than a hawser, used for transporting vessels in harbour and for other purposes. A vessel is supplied with warps of various sizes.

When a kedge is put out from the ship with a warp, and she is moved along by heaving on the capstan, windlass, or winch, this operation is termed *kedging* or *warping* the ship. When moved along in a similar manner by means of a warp made fast to a dolphin, or to any object on shore, this is termed *warping* her.

WARRANT OFFICERS, a distinguishing title for those officers under the lieutenants, such as the *purser, boatswain, gunner,* and *carpenter,* whose warrant of office gives them the charge of certain of the ship's stores.

WARRANTY, in the contract of marine insurance, a con-

dition or engagement expressed in writing on the face or margin of the policy that a certain thing has happened or is to happen. "A mere representation," says Lord Mansfield, "may be equitably and substantially answered, but a warranty must be strictly complied with."

WASH-BOARD. A shifting strake of boards along the topsides of any small vessel which has no bulwarks, used occasionally to keep out the spray. Also, a light strake of board fixed above the gunwale of a boat.

WASTE-STEAM-PIPE. See description of *Steam-Engine*, Sect. 41.

WATCH. The crew of every vessel while at sea, is divided generally into *two* portions called *Watches;* one, the *starboard watch*, which, in the merchant service, is the captain's watch, and is often commanded by the second mate; the other, *the larboard* (or, as it is now termed in the Royal Navy, the *"port") watch*, which, in the merchant service, is commanded by the chief mate. In the Royal Navy, these watches are commanded by the lieutenants successively.

The periods of time occupied by each part of the crew alternately, while thus on duty, are also termed WATCHES. The following is the succession of these watches, commencing at noon. (The time is in most vessels marked by BELLS, which are struck every half hour).

12 to 4	(The afternoon watch) .	8 Bells.	
4 to 6 P.M.,	(The first dog-watch) .	4 „	
6 to 8 „	(The second dog-watch) .	4 „	(counted 5 to 8)
8 to 12	(The first night watch) .	8 „	
12 to 4	(The middle watch) . .	8 „	
4 to 8	(The morning watch) .	8 „	
8 to 12	(The forenoon watch) .	8 „	

The purpose of dividing the time from 4 to 8 P.M. into two half watches of two hours each (called *dog-watches*) is to make an uneven number, seven instead of six, throughout the twenty-four hours, and so to alter the watches kept from day to day by each portion of the crew; otherwise, the same watch would stand during the same hours for the whole voyage.

When this alternation of watches is kept up throughout the twenty-four hours, it is termed having *watch and watch*: in distinction from keeping all hands at work during one or more watches.

(See *Dana's Seaman's Manual).*

ANCHOR-WATCH. A small watch, composed of one or two men, appointed to look after the ship while at anchor or in port.

WATER-LAID ROPE. See *Rope.*

WATER-LINES, in shipbuilding, "those horizontal lines supposed to be described by the surface of the water on the bottom of the ship, and which are exhibited at certain depths upon the sheer-draught," *(Shipwright's Vade Mecum)*. The most particular of these are: *The light-water-line,* which shews the depression of the ship's body in the water when she is light or unladen: and the *load-water-line,* which exhibits her depression in the water when laden.

WATER-LOGGED. The state of a vessel whose hull is sunk deep, in consequence of an extraordinary weight of water received into her by a leak or otherwise. In this condition she is nearly or altogether unmanageable, and would sink, unless by means of exertion at the pumps, or owing to there being a light floating cargo, such as timber, on board.

WATER-SAIL, or SAVE-ALL. A small sail occasionally set under a main, spanker, or swinging boom. It is seldom used, and only in fine weather.

WATER-SPOUT. A remarkable species of whirlwind which is sometimes met with at sea, mostly during the day, and in warm climates. When it is forming at a small distance, "a portion of a dense cloud is observed to descend and stretch itself towards the sea in a conical shape;" at the same time the surface of the sea under it ascends a little way in the form of vapour, "from the centre of which a small cone proceeding upwards unites with that projected from the cloud." Mr Horsburgh (in the Introduction to his *India Directory,* from which these particulars are extracted) mentions that water-spouts sometimes disperse suddenly without being completely formed; "at other times they move rapidly

along the surface of the sea, and continue a quarter of an hour or more before they disappear." He remarks that small vessels are in danger of being capsized when they have much sail set, and that large vessels, if their topsails be not clued up, and the yards secured, "may have them carried up to the mast heads by the force of the whirlwind, and thereby lose their masts;" and that "in the vicinity of a water-spout, the wind is subject to fly all round in sudden gusts, rendering it prudent for ships to take in their square sails."

WATER-WAYS, in shipbuilding, the thick planks at the outside of the deck, wrought over the ends of the beams, and fitting against the inside of the top-timbers; to which, as well as to the ends of the beams, they are bolted, and thus form an important binding. Their inner edge is chimed to form a channel for water to run off the deck. (Plate II., Fig. 6).

WAY *of a vessel:* her progress or motion through the water. See *Fetch*, *Fresh Way*, and *Under Weigh.*

WEAR, or VEER. To bring a vessel upon the other tack by turning her round with her head away from the wind. Wearing causes the ship to lose ground, and is consequently never practised except when she will not *stay*, or where staying might be attended with danger.

WEAR AND TEAR, when expressed of a vessel, may be defined as its ordinary decay and deterioration arising in the prosecution of a voyage or voyages. This phrase is also made to comprehend those damages and losses, such as the splitting of sails under ordinary circumstances, or the loss of an anchor by the cable breaking when the ship rides hard, which the shipowner has to bear, in distinction from those damages and losses arising from perils of the sea for which the insurers are liable. See *Average (Particular)*, and *Insurance (Policy of).*

WEATHER, in sea phrase, is used to distinguish the side from which the wind blows; *lee* being the opposite term. Thus, we speak of the *weather side* of the ship, her *weather quarter*, the *weather braces*, &c. In like manner,

a weather shore means a shore lying to windward. *A weather tide* is a tide running to windward.

To weather any object, means to succeed in sailing to windward of it.

WEATHER-BITT. To take a turn with the bight of a cable round the windlass end, in order to prevent it from slipping round the windlass when the ship is at anchor; this is done sometimes to save the trouble of stoppering, or in vessels which have no stoppers.

WEATHER-GAUGE. See *Gauge.*

WEATHER-HELM. A vessel is said to carry *a weather helm* when, owing to her having a tendency to gripe, the helm requires to be kept a little to windward, (or as it is called *a-weather*), in order to prevent her head from coming up in the wind while sailing closehauled. She carries *a lee helm* if it is necessary to keep the helm a little *a-lee,* in order to prevent her head from falling off.

Owing to the action of the water upon the rudder, a lee helm is more apt than a weather helm to make a ship leewardly. A slight alteration of the position of the masts, in many cases, remedies such defects.

WEATHER-ROLLS. The rolls which a vessel makes *to windward* in a heavy sea upon the beam. Weather-rolling is attended with danger, as it exposes the deck to the coming wave; and care should be taken to prevent it by keeping sufficient sail aloft.

The sudden rolls which a vessel makes *to leeward* are termed *lee lurches.*

WEATHERLY. A ship is said to be *weatherly,* when she holds a good wind, that is, when, owing to her trim, to the shape of her bottom, or to the depth of her keel, she presents so great a lateral resistance to the water while sailing closehauled that she makes very little lee-way. *A leewardly ship* is the reverse.

WEDGE. A tapered piece of wood forming a well known mechanical power. Such wedges are much used in the building and repairing of ships, and they get the name of *sett-wedges.*

Iron wedges are used for splitting out blocks and for similar purposes.

WEFT. [WAFT].

WEIGH. See the article *Anchor* and *Under Weigh*.

WEIGH-SHAFT, or WIPER-SHAFT. See description of *Steam-Engine*, Sect. 5 and 31.

WELL. A compartment formed by bulkheads round a vessel's pumps, to keep them clear of obstructions, to protect them from injury, and also to give ready admittance for examining the state of the pumps. The pump is *sounded* by dropping a measured iron rod (called a *pump-rod*) down into it by a long line, hence the increase or diminution of leaks is readily ascertained.

The well of a fishing smack is a compartment formed by bulkheads properly strengthened and tightened off, the bottom plank in the way of it being perforated with holes to give free admission to the water, so that the fish which are caught may be kept alive therein.

WESTING. See *Northing*.

WHALE FISHERIES. On this subject various information is presented under the heads, FLENSING, ICE-BERG, HARPOON, FORTIFYING, &c.

It may here be noticed that, according to Captain Scoresby's opinion, a ship intended for the Greenland or Davis Strait's fishing, should be of from 300 to 400 tons admeasurement, very substantially built, doubled and fortified, should have six or seven feet perpendicular space between decks, should be furnished with a description of sails which are easily worked, and should possess the property of fast sailing. The whale boats, being liable to receive damage both from whales and ice, are always carvel built, a structure which is easily repaired.

A great amount of valuable and interesting matter in regard to this subject generally, may be found in Captain Scoresby's "*Account of the Arctic Regions and Northern Whale Fishery*," which treats shortly also of the South Sea whale fisheries.

WHALER. A name for any whale fishing vessel.

WHARF. An erection fitted for the convenience of loading and discharging vessels, and for receiving their cargoes into safe custody. The individual who has charge of it is called a WHARFINGER. The dues for landing or shipping goods at a wharf, get the name of WHARFAGE.

WHEEL. The same as *Steering-Wheel.*

WHEEL-ROPES. Ropes rove through a block on each side of the deck, and led round the barrel of the steering-wheel. *Chains* are now much more commonly used for this purpose than ropes; and ropes made of strips of raw hide are also frequently employed for wheel-ropes. When there is no steering-wheel, the rope is attached to the extremity of the tiller, and gets the name of the *Tiller-rope.*

WHELPS. Pieces of wood bolted *on the main piece of a windlass,* or *on a winch,* to save it from being chafed by the chain or rope, and also to make the chain hold more firmly on the windlass. *The whelps of a capstan,* are pieces of wood bolted, at certain distances, round the barrel to save it from being chafed, &c.; they are thicker at their lower end so as to form an upward taper, in order to cause any warp that is hove upon to fly up when surging the capstan.

Gryll's Patent Whelps seem to be well deserving of attention. Among other advantages afforded by them, surging on capstans, windlasses, windlass-ends, and winches, is rendered unnecessary, as the chain fleets itself upon them, whereby a considerable saving of time arises in the process of heaving.

WHERRY. A very light built sharp boat, pulled by oars, and seated for the accommodation of passengers.

WHIFT. [WAFT].

WHIP. A purchase formed by a rope rove through a single block.

To whip, means to hoist by a whip. Also, to secure the end of a rope from fagging by means of a seizing of twine.

WHIP-UPON-WHIP, or *a double Whip,* is one whip applied to the fall of another. (*Dana's Seaman's Manual).*

WHIRLWIND. A sudden and impetuous wind having a spiral or whirling motion. Whirlwinds are sometimes occasioned by high uneven land: when the wind is blowing

strong, gusts of this description from mountains descend sometimes on the surface of the contiguous sea. (*Horsburgh's India Directory*).

See *Water-spout.*

WHISKERS. Two booms rigged out one on each side before the knightheads, steadied at their inner ends by a gooseneck, which hooks into an eyebolt fixed either in the hawse-wood or in each side of the bowsprit: they have sheaves or iron cleats near their outer ends, and are used instead of a spritsail-yard to spread the jib-boom guys, for the better security of this boom when the jib is set.

WHITE-SQUALL. See *Squall.*

WINCH. A species of small windlass or crab, turned round by crank handles. *The double winch* is formed with two barrels, the one fitted with a spur-wheel and the other with a pinion, which give increased power. On board of a vessel it is commonly mounted upon the gallows stanchions, and it is found particularly useful for merchantmen; in these, indeed, it has in a great measure superseded the use of the capstan. See *Whelps.*

A small winch with a fly wheel is used in making rope or spunyarn: it gets the name of a *spunyarn-winch.*

WIND. Under this head reference may be made to the articles *Breeze, Gale, Hurricane, Monsoons, Squall, Trade-winds, Typhoon, Whirlwind, &c.*

A vessel is said to be *all in the wind*, when her head is too close to the wind so that the sails are shivering.

Betwixt wind and water, is a phrase applied to that part of a vessel which is at the surface of the water.

Hold a good wind: see *Weatherly. On a wind:* see *Close-hauled.*

WIND-BOUND. A vessel is *wind-bound*, when detained in a harbour or roadstead by a contrary wind.

WIND-RODE. See *Tide-rode.*

WIND-SAIL, or *Ventilator.* A sort of long canvass bag turned bottom upwards, let down a vessel's hatchway for circulating air below; it is suspended by a whip and stretched out with hoops and guys, and has near its upper end an open-

ing at the side which is kept to windward by means of the guys.

TO WIND *a Ship* or *Boat:* to bring her round till her head occupies the place where the stern was.

WINDAGE *of a gun:* the difference between the diameter of its bore and that of the shot.

WINDING, expressed of a plank or piece of timber, implies that it is twisted or has an uneven surface: if quite fair, it is said to be *out of winding.*

WINDLASS. A machine which is erected on the fore part of a vessel's deck, for weighing the anchor, or obtaining a purchase on other occasions. It consists of a strong horizontal beam of wood called the *main piece,* suspended at its ends by iron spindles working in collars or bushes inserted in the *Windlass-bitts,* and the *Windlass-ends,* which are two horizontal pieces forming a continuation of the windlass outside these bitts, and connected with the main piece by means of the spindles going through them. The main piece has holes in it for inserting handspikes into, in order to heave it round when required: it has generally pieces of hard wood, called the *Windlass-lining,* fitted and bolted round it to preserve it from being chafed, and also similar pieces of wood or iron projecting above the lining to make the cable hold on more firmly: these latter get the name of *whelps,* which are specially noticed under that head.

The gearing invented for increasing the power and sureness of the windlass, the most important of which are those patented by Messrs Tyzack, Dobinson, and Co., and by Messrs Pow and Fawcus, (both of North Shields), are deservedly coming into general use. In employing these, handspikes are not required, although holes are nevertheless cut through the windlass to enable handspikes to be used in case of accident to the gearing.

See also *Spanish Windlass.*

WINDLASS-BITTS, or (as they are more commonly termed in England), CARRICK-BITTS. See *Bitts.*

WINDLASS-CHOCKS. Fore-and-aft pieces of oak fitted on the deck and bolted to the beams immediately before the

windlass, their after ends coming partly under it, and the other ends being formed with a shoulder, between which shoulders and the windlass, when the ship is riding at anchor, wedge pieces are driven in to afford an additional support to the windlass.

WINDLASS-LINING. See description of *Windlass.*

WINDWARD. See the articles *Lee* and *Beating to Windward.*

WING, in shipbuilding, that part of the hold or between decks which is next the ship's side, more particularly at the quarter. The term *wing* is also applied to the projecting part of a steam-vessel's deck before and abaft each of the paddle-boxes; this is bounded by a thick plank called the *sponsing-rim* or *wing-wale* which extends from the extremity of the paddle-beam to the ship's side.

WING-TRANSOM. See *Transoms.* (Plate II. Fig. 5.)

WINGERS. A name for casks stowed in the wings of a vessel.

WIPER-SHAFT, or WEIGH-SHAFT. See description of *Steam-Engine,* Sect. 5 and 31.

WIRE-ROPE is usually made of iron wire. For standing rigging straight wires have been employed, parcelled and served with spun-yarn, and saturated with some preservative from rust. "Other wire ropes are formed much in the same manner as ropes of hemp, the wires taking the place of rope-yarns, and being twisted into strands." Others are made by machinery so contrived that "to each wire a motion is given which prevents its being warped; the wires, generally six in number, are laid symetrically round a core of hemp to form the strand, and the strands (also generally six) are in like manner laid round a core to form the rope, so that the strands are all at an equal distance from the centre of the rope; all the wires, therefore, are of the same length, and are subjected to an equal strain. They are only one-half the weight, and one-sixth the bulk of hemp ropes of equal strength, besides being cheaper and more durable," and are well adapted for standing rigging, particularly for that of steam vessels; on account of their want of elasticity

they are very little used in sailing vessels: for running rigging they are not sufficiently flexible. "Wire-rope is found to be an admirable lightning conductor."

A table shewing the comparative weight and strength of wire and hemp ropes is presented in the *United Service Magazine* for the year 1842.

WOOD-LOCK. A piece of hard wood put in immediately beneath one of the pintles of a rudder, with a bolt going through it and forelocked, to prevent the rudder from unshipping.

WOODS-ENDS, or HOODING-ENDS. See *Hood.*

WOOLD, or WOULD. To bind with ropes; for example, where a spar that has been wounded or sprung, has one or more pieces of wood bound to it in this way as a temporary fish.

WORK *a ship,* to direct her movements by the management of the sails and rudder. This phrase is especially applicable to the shifting of the sails and rudder at the proper time in the process of tacking.

A ship is said to work, when her fastenings at any part have become slack, and in consequence thereof she strains and yields in the pitching and rolling motions.

See *Day's Work,* and *Observation.*

WORM *a rope;* to fill up the spiral divisions between the strands by passing spun-yarn or other small stuff along them in order to render the surface smooth for parcelling and serving. Stuff so wound round is called *worming.*

WORM, in gunnery, an instrument resembling a double cork-screw, fixed upon a staff; it is used chiefly for drawing the remains of cartridges; this operation is termed *worming the gun,* and requires to be done at least after every third discharge.

WORMED. The state of timber or plank when a number of internal cavities are made in it by a particular kind of worm, called the *Teredo navalis,* that abounds chiefly in tropical climates. Various preventives against this have been used for paying vessels' bottoms with, as sulphur, or coal-tar and arsenic mixed, and that with a good degree of success

especially in ships going to the Mediterranean; but while these methods have the recommendation of cheapness, the coating of such material, by forming an uneven surface on the bottom, tends to deaden the ship's way. The only advantageous protection, therefore, seems to be a sheathing of copper, or yellow metal. Generally speaking, injury occasioned by worms is not a loss for which underwriters are liable.

WOULD. [Woold].

WRAIN-BOLT. A ring-bolt used in shipbuilding for *setting-to* the planks.

Wrain-Staff, *Wrung-Staff*, or "*Dwang-Staff*." A sort of stout billet of tough wood tapered at the ends so as to go into the ring of the wrain-bolt for the purpose of setting-to the planks. See the article *Set*.

WRECK. The same as *Shipwreck*. It also implies the thing wrecked, whether the ship or goods or any part of them be spoken of.

An abstract of the *Wreck and Salvage Act*, passed while the earlier part of this work was in the press, is added in an appendix hereto.

WRING *a Mast:* to bend it by putting an undue strain upon the shrouds.

YACHT. A vessel of pleasure or state, whether propelled by sails or by steam-power.

YARD. A long cylindrical piece of timber having a rounded taper towards each end, slung by its centre to a mast. The yards are used for spreading square sails upon; they have sheave-holes near their extremities for the sheets reeving through. (Plates III. and IV).

Either end of a yard, or rather that part of it which is outside the sheave-hole, is termed the *yard-arm:* the *quarter* of a yard is about half way between the sheave-hole and the slings. See *Parrel*, *Slings*, and *Truss;* and also *Lateen-Sail*, and *Lug-Sail*.

Yard-arm and Yard-arm, implies the situation of two vessels lying alongside of each other so near that their yard-arms cross or touch.

YARD-ROPES. Ropes rove through a sheave-hole at each yard-arm, and through blocks at the head of the lower mast of a sloop or schooner (whose lower square sail is not bent to the yard) for the purpose of hoisting and lowering down that sail.

YAW. A term to imply that a vessel moves off the direct line of her course in steering.

YAWL. A name given to the smallest boat used by fishermen. See also the article *Boat.*

YELLOW-METAL (Muntz's Patent). See *Copper.*

YEOMAN, or BOATSWAIN'S YEOMAN. A person appointed to assist in attending to the stores of the boatswain in a large ship of war.

YOKE. A piece of board or metal made to ship on the head of a boat's rudder, with a line called the *yoke rope* attached to each end, by which the boat is steered.

ZENITH. In astronomy, *the Zenith of any place on the globe* is "that point in the heavens immediately above the place, and *the Nadir* is that point immediately under it. Hence, the zenith and nadir are the poles of the rational horizon," from which at every point they are distant 90 degrees. (See *Circles*).

THE ZENITH DISTANCE of a celestial object, is an arc of a vertical circle contained between the centre of the object and the zenith: if the object be on the meridian, it is termed *meridian zenith distance.*

(*Norie's Epitome. Raper's Practice of Navigation and Nautical Astronomy*).

ZODIAC, in astronomy, a space including about $8\frac{1}{2}$ degrees on each side of the ecliptic, within which the motions of all the planets are performed. (*Baharie's Marine Board Examination*).

The ecliptic or zodiac is divided by astronomers into 12 equal parts, called *signs of the zodiac,* each containing 30 degrees. They are thus named:—

1 Aries (the Ram).
2 Taurus (the Bull).
3 Gemini (the Twins).
4 Cancer (the Crab).

5 Leo (the Lion).
6 Virgo (the Virgin).
7 Libra (the Balance).
8 Scorpio (the Scorpion).
9 Sagittarius (the Arrow-bearer or Archer).
10 Capricornus (the He-goat).
11 Aquarius (the Water-bearer).
12 Pisces (the Fishes).

The first six signs, being on the north side of the equinoctial, are termed *northern signs;* the last six, being on the south side of it, *southern signs.*

ZONES. In geography, the earth is divided by certain imaginary circles parallel to the equator into portions called *zones,* which are distinguished according to their comparative degrees of heat and cold as follows:—

THE FRIGID ZONES, are "those regions about the poles where the sun at certain seasons does not rise or set for some days; they extend round the poles as far as 23° 28′. The imaginary circle which bounds this limit in our northern hemisphere is called the *arctic polar circle,* and that portion of the globe included within it, the *north frigid zone.*" The circle and zone around the south pole are termed the *antarctic polar circle,* and the *south frigid zone.* (*Norie's Epitome of Navigation and Nautical Astronomy*).

THE TEMPERATE ZONES, are comprehended between the polar circles and the tropics: the *north temperate zone,* between the arctic circle and the tropic of Cancer, and the *south temperate zone,* between the antarctic circle and the tropic of Capricorn.

THE TORRID ZONE, is the space included between the two tropics, over every part of which space in succession the sun is vertical at some time of the year.

APPENDIX.

APPENDIX.

No. I.

WRECK AND SALVAGE ACT.

The following is an abstract of the "Act 9 and 10 Vict., c. 99, for consolidating and amending the Laws relating to Wreck and Salvage," which comes into general operation on the 1st of October 1846.*

2. By this 2d section, various statutes therein enumerated are repealed; it being at the same time provided, "that all offences which shall have been committed, and all penalties and forfeitures which shall have been incurred, previously to the first day of October, one thousand eight hundred and forty-six, shall and may be punishable and recoverable respectively" under the Acts above referred to, or any of them, as if the same had not been repealed.

3. For the purpose of carrying the provisions of this Act into effect, the Receiver-General of droits of Admiralty is authorized to appoint persons to act under him, to be styled "Receivers of droits of Admiralty,"—lists of whom shall be transmitted to the Collectors of Customs and to the Secretary of Lloyd's Committee, to be affixed by them in a conspicuous place, in each of the custom-houses of the different ports in England, Wales, and Ireland, and at Lloyd's.

4. Every lord or lady of any manor, or patentee or grantee of the crown, or other person or body corporate, who may claim to be entitled to wreck of the sea, or to any goods found jetsam, flotsam, lagan or derelict, must, in order to enforce the claim, give notice in writing to such one of these receivers who resides within or nearest to the manor or other district

* The Acts, whereof abstracts are here given, have been passed while the earlier part of this work was in the press.

in which such claim is made; and the receivers are invested with certain powers in the event of contending claims being brought forward by different parties.

5. All persons who shall find, take up, or be in possession of any wreck of the sea, or any goods or other articles which shall have been floating or sunk in the sea "or in any tidal water, or cast, thrown, or stranded upon the shore," whether found above or below high water mark or otherwise, or who shall find or take possession of any droit of Admiralty, must forthwith transmit to the receiver, or to the collector or comptroller of customs, at the port or place nearest to which such articles or droits have been found, a report in writing containing a specific description of the marks (if any) thereon, and of the time and situation when and where the articles were found, and shall place them at the disposal of such receiver or customs' officer: and every officer of the customs is forthwith to transmit such report to the nearest receiver. Any person retaining possession of, defacing, concealing, or disposing of articles such as those above enumerated, or not complying with the regulations here noticed, forfeits all claim to salvage, and is declared liable to certain heavy penalties.

6. Any receiver, or officer of the customs, is authorized, upon the warrant of a magistrate or justice of the peace, to search for, seize, and detain any such articles as shall not have been reported or dealt with in the manner hereinbefore directed, and for that purpose to enter any house, store, or building, or any ship, vessel, or boat; and such receiver or customs' officer shall be entitled to salvage for the same. Persons giving information which leads to any such seizure shall be entitled to a reward out of the salvage, the amount whereof is to be fixed by the receiver-general. If the seizure be made by an officer of customs, he is to send a written report of it to the nearest receiver.

7. Every receiver, within forty-eight hours after obtaining such report or making such seizure, is to send a specific report in writing "to the principal officer of customs at the nearest port," and a similar report to the Secretary of the Committee of Lloyd's, who is to place it in some conspicuous situation for the inspection of all persons choosing to examine it: provided always that the value of the articles in question shall amount to the sum of £20 at the least. For every such report, the receiver is entitled to a fee of 10s. from the owner of the articles, if they be claimed, or out of their proceeds, if not claimed.

8. If notice of a claim be given by the lord or lady of any manor or other party to a receiver, and subsequently thereto any article be reported to or seized by the latter, or by any other receiver, which may appear to him to have been found within the limits of the manor or district in respect of which such notice of claim has been given, he is to give notice thereof to the claimant within twenty-four hours after receiving such report or making such seizure.

9. If the rightful owner of any article so reported or seized shall, within twelve months thereafter, make out his claim to the satisfaction of the receiver, it is to be restored to him "on payment of the duties and necessary charges attending the care or removal of the same, and a reasonable compensation for salvage thereof, and also on payment to the said receiver of a sum after the rate of five *per centum* on the value of the article; but in no case, whatever may be the value of the article, shall such per-centage exceed fifty pounds."

10. If any such article be not legally claimed by the owner within the above mentioned space of twelve calendar months, and any lord of the manor or other person, having given due notice of his claim, shall, within thirty days after the expiration of these twelve months, produce evidence of his claim satisfactory to the receiver, the article saved is to be delivered up to such person on payment of the duties, expenses, and allowances noticed in the preceding section. But if the receiver determine against the right of such claimant, or against the evidence produced as to the finding of the article, he is bound, at the request of the claimant, to signify this determination in writing, with the date thereof, and the reasons for the same.

11. When no claim to an article in the custody of a receiver or customs' officer is established by its owner or by any lord of the manor or other party within the respective periods aforesaid, that article "shall be deemed and taken to be droits of the Admiralty," and shall be sold by him without any legal process, and the net proceeds, after payment of salvage, if any be payable, and of other charges, shall be forthwith transmitted to the receiver-general. If the article be of so perishable a nature, or so much damaged that, in the opinion of the receiver, it cannot be kept, or if its value be insufficient to defray the expense of warehousing, he may sell the same before the expiration of the periods above mentioned, and transmit the net proceeds, after defraying the salvage

and other charges, to the receiver-general, in whose hands they are to remain, subject to the claims of all persons in like manner as the article itself would be if unsold. He may also adopt the same steps as those last noticed if the article appear to him not to be of greater value than five pounds, and forthwith pay salvage (which in such case shall not be more than one-third of the net produce of the sale) to the party claiming the same.

12. "No vice-admiral or deputy vice-admiral of any county, or any agent of the same, shall, as such, henceforth receive, take, seize, or in any manner interfere with any wreck of the sea or any other of the goods or articles hereinbefore mentioned."

13. If, in any of the above-mentioned cases, the net produce of the sale, after payment of duties and other necessary expenses, be found insufficient to defray the salvage, the receiver may report the circumstances to the receiver-general, on whose application the Commissioners of her Majesty's Treasury are authorized to allow such sum to be paid out of her Majesty's Exchequer by way of salvage as they shall deem sufficient. If the same happen within the jurisdiction of the Lord Warden of the Cinque Ports, his deputy-serjeant or other officer, in whose custody the articles were, may report to the Lord Warden with the like intent.

14. If any ship or vessel be in distress, or be stranded or run on shore, any receiver, justice of the peace,—mayor, bailiffs, or other officers of corporations and port-towns,—constables, headboroughs, tythingmen, or officers of customs or excise, may "summon and call together as many men as shall be thought necessary to the assistance and preservation of such ship or vessel and its cargo, or for the saving human life, and if there be any ship or vessel belonging to any of her Majesty's subjects, or any waggons, carts, and horses," near the place where such ship is in distress or danger, the said receiver and other officers hereinbefore mentioned, or any of them, are hereby required and empowered to demand of the superior officer of the ship assistance by boats, or such hands as can be conveniently spared, and to demand the use of any waggons, carts, and horses, of the owner or person having the charge thereof, for the service and preservation of the vessel in distress, and her cargo, or for the saving of human life; "and every such superior officer, owner, or person refusing or neglecting to comply immediately with such demand, shall for

every such refusal or neglect forfeit and pay any sum not exceeding one hundred pounds."

15. "For the prevention of confusion among persons assembled to save any ship or vessel in distress as aforesaid, or any of the goods or effects belonging thereto, all persons so assembled shall conform, in the first place, to the orders of the master or owner or officer in charge of the said ship or vessel in distress, and in the next place to those of the receiver, and for want of their presence to those of the officers hereinafter mentioned, in the following subordination, as any of such officers shall be present; (that is to say) first the officers of customs or coast-guard, then those of the excise, then of the sheriff or his deputy, then any justice of the peace, then any mayor or chief magistrate of any corporation, then any coroner, then any chief constable, then any petty constable or peace officer; and any person whomsoever acting knowingly or wilfully contrary to such orders shall, on conviction before one justice of the peace, forfeit and pay any sum not exceeding fifty pounds."

16. Any receiver, or, in his absence, any justice of the peace, shall, as soon as conveniently may be, examine upon oath any person belonging to the vessel, or others, who may be able to give any account thereof or of her cargo or stores, as to the name or description of the ship, the names of the master or chief officer and owners thereof, and of the owner of the cargo, and of the ports or places from or to which the ship was bound, as to the occasion of her distress, and of the services rendered, and any other relative matter which the receiver or justice may deem necessary; this examination he is to take down in writing, and to transmit one copy to the Receiver-general, and another to the Secretary of Lloyd's Committee, to be placed by the secretary in some conspicuous situation. For every such examination by a receiver he shall be entitled to receive from the owner of the vessel or cargo, or out of the produce of the sale thereof, the sum of one pound, and he may detain such vessel or cargo until that sum be paid. Any person refusing to be so examined is, for every such refusal, liable in a penalty not exceeding fifty pounds.

17. It shall be lawful for the receiver at that part of the coast where any ship or vessel shall be stranded or wrecked, or where any wreck of the sea or goods shall be cast on shore, and also for the owner or master of such ship, and for the owners of such goods or of any part thereof, and for any officer of the customs, coast-guard, or excise, and other officer, and for all persons who shall be employed or acting in assist-

ing any such receiver, officer, master, or owner, "in the saving or recovering any such ship or vessel, or the cargo, stores, tackle, or other article belonging to the same, or the preserving the lives of the crew or persons belonging thereto, or of any wreck as aforesaid, to pass and repass with their horses, carts, carriages, or servants, doing as little damage as possible, over any lands, pier, jetty, wharf, or landing place near to the part of the sea coast where such vessel shall be so wrecked or stranded, or on which such wreck shall be cast, without interruption or obstruction by the owner or occupier thereof, for the purpose of saving, recovering, and preserving any such ship or vessel, or goods or stores, or any boat, cables, timbers, spars, masts, cordage, or other tackle or article belonging to any ship or vessel, or for saving or otherwise assisting in preserving the lives of any persons, or for the taking possession of any wreck or goods or other article cast on shore, or found on shore or found near thereto, provided there shall be no road by which the parties may pass and repass with as much convenience and expedition as over such lands, pier, jetty, wharf, or landing place, and also to place any planks, timber, or any part of the wreck, or any goods or stores or other article removed or saved from any such ship or vessel, or any other wreck or goods or other article as aforesaid, upon any such land, pier, jetty, wharf, or landing place, for a reasonable time, until they can be removed to some warehouse or safe place of deposit, doing as little damage as possible, and making compensation to the occupier of such land, pier, jetty, wharf, or landing place for any damage done by all or any the means aforesaid, which compensation shall be a charge upon the wreck, goods, or other article in respect whereof the damage may be done, in like manner as salvage; and in case the parties cannot agree as to the amount thereof, then the same shall be ascertained and settled in any of the manners and within such times as the amount of salvage is herein directed to be ascertained and settled."

18. Any owner or occupier of any such land or premises who shall, by locking his gates, or refusing upon request to open them, or otherwise, interrupt or hinder any of the persons enumerated in the preceding section, from passing over his land or premises for the purposes mentioned in that section, "or shall obstruct or hinder the placing any such plank, timber, part of a wreck, goods, stores, or other article upon his land, pier, jetty, wharf, or landing-place, or shall prevent their remaining there for a reasonable time until the same can be

removed to some warehouse or safe place of public deposit," "shall for every such offence forfeit and pay any sum not exceeding one hundred pounds."

19. Every person (except receivers under this Act) who shall act or be employed in any way whatsoever in the saving or preserving of any ship or vessel in distress, or of any part of the cargo thereof, or of the life of any person on board the same, or of any wreck of the sea, or of any goods, jetsam, flotsam, lagan, or derelict, or of any anchors, cables, tackle, stores, or materials which may have belonged to any ship or vessel, whether she shall have been in distress or otherwise, and whether such person shall have so acted at the request of or on application by any person in authority, or by the master or owner of the ship, or otherwise, shall, within fourteen days after the service so performed, or within fourteen days after the owner or any other person shall have established his claim to any such article as aforesaid, be paid a reasonable reward or compensation by way of salvage for such service, by the commander, master, or other superior officer, mariners, or owner of the said ship or vessel, or their agent, or by the merchant whose ship, vessel, or cargo shall be so saved as aforesaid, or by the owner of the other articles hereinbefore mentioned, or other person claiming the same; and in default thereof the ship, or any part of the cargo remaining on board thereof so saved, shall remain in the custody of the High Court of Admiralty, and the said goods or other article (and also, until warrant issued from the High Court of Admiralty, the said ship or cargo) shall remain in the custody of the receiver or officer of the customs, until the person so acting or employed in the preservation of such ship, goods, or other article as aforesaid, shall have been reasonably compensated for his assistance and trouble, or reasonable security given for that purpose to the satisfaction of the receiver, or officer of the customs, or High Court of Admiralty; and "every receiver who shall act or be employed in the saving or preserving of any ship or vessel in distress which shall not become a droit of Admiralty, shall be entitled to receive from the owner thereof the sum of two pounds for the first day, and the further sum of one pound for every subsequent day on which he shall be employed in the said service, if the said ship or vessel, together with the cargo thereof, shall be of or above the value of six hundred pounds, and the said receiver shall be entitled to a moiety of such respective sums if the said ship and cargo shall be under the value of six hundred pounds, and the said ship or vessel shall

be so detained as aforesaid until such sums shall have been paid to the said receiver."

20. The Receiver-general is empowered to make regulations from time to time as he may think proper, in regard to the rate of salvage to be paid by the receivers when the thing saved shall not be proved to belong to any person and shall be sold as droits of Admiralty in manner hereinbefore directed.

21. If any person shall have rendered any such service as those enumerated in the 19th section (not including ordinary pilotage) and the said person, and the master or owner of the ship or his agent, or the owner of the article saved or his agent cannot agree upon the amount of salvage or compensation to be paid in respect of such service, the party who rendered it shall deliver to such master, owner, or agent, a statement in writing, without prejudice to either party, of the amount of salvage or compensation claimed, "and (unless such salvage shall have been already paid by any receiver under the powers hereinbefore contained, or the claim thereto shall exceed the sum of two hundred pounds) the matter or difference may be determined by any two justices of the peace residing at or near to the place where such service has been rendered, within forty-eight hours after such difference shall be referred to them for their determination thereof, and if they cannot agree respecting the same, then it shall be lawful for them to nominate any third person conversant in maritime affairs, at their option," who shall, within forty-eight hours after he shall be so nominated, ascertain the amount of salvage to be paid; and the said justices, or any one of them, and such nominee, shall have full power and authority, whenever they see occasion, to examine the parties or their witnesses upon oath, and it shall be lawful for the person so to be nominated by the said justices, who decides on the amount of salvage to be paid as aforesaid, to demand and receive, of and from the owner of the ship or vessel, or of the article so saved, or of the salvors or their respective agents, a sum of money not exceeding two pounds two shillings; "and such owner or his agent, or such salvors, at the discretion of the said justices or person appointed by them as aforesaid, are hereby required to pay the same to the person so nominated as aforesaid immediately after he shall have made his award or decision; and such sum of two pounds two shillings, and such amount of salvage, may be recovered as any penalty imposed by this act: Provided always, that when the salvage claim shall exceed the sum of

two hundred pounds, then and in every such case the said matter or difference shall, in the event of no such agreement being made as aforesaid, either by reference to arbitration or otherwise, be determined exclusively by the High Court of Admiralty."

22. The Commissioners of Admiralty are authorized to nominate and appoint, for each of such ports, towns, and districts as they may think fit, three or more proper persons, to be called Commissioners of Salvage, who, or any three or more of them, shall have power to adjust and determine any difference respecting salvage in the same manner and in such cases as the justices herein-before in that respect mentioned, and also to nominate and appoint a secretary or registrar to these commissioners, who is to keep a record of all their proceedings and awards. The same power and authorities hereinbefore given to the said justices and to the person who may be nominated by them, are granted to these commissioners of salvage, who are authorized to demand such fee or reward for deciding on every claim as shall be regulated and appointed by the Commissioners of the Treasury: "and the said Commissioners of Salvage, or any three or more of them, shall have the power to commit for contempt."

23. In case any person so claiming salvage or compensation for services rendered as aforesaid, or the person against whom such claim is made, or his agent, shall be dissatisfied with the award of the justices or their nominee, or of the Commissioners of Salvage, it shall be lawful for either of them respectively, within ten days after such award shall have been made, but not afterwards, to notify to such justices, or to the said Commissioners of Salvage, as the case may be, his desire of obtaining the judgment of the High Court of Admiralty respecting the said salvage or compensation, and thereupon such person shall forthwith proceed by taking out a monition within thirty days from the date of such award; but in such case the receiver or officer of the Customs in whose custody the ship, goods, or other article in respect of which such claim of salvage has been made shall have been detained as aforesaid, is hereby required and empowered to release such ship, and to deliver to the owner, or his agent, such goods or other article, upon the said owner or his agent giving good and sufficient bail in double the amount of the sum awarded for salvage or compensation, or if no sum shall have been so awarded, then to such amount as the receiver shall deem sufficient, and which bail the receiver is hereby authorized to take and certify ac-

cording to the form contained in the schedule (A) hereunto annexed, and transmit the same without delay to the said Receiver-General, together with a true certificate in writing of the gross value of the article respecting which salvage is claimed, and also a copy of such proceedings and award, on unstamped paper, certified under the hand of the receiver taking such bail, and the same shall be admitted by the Court of Admiralty as evidence in the cause ; and the said receiver shall for every such certificate be entitled to receive from the owner of such ship, goods, or other article, or from his agents, or out of the proceeds of the sale thereof, the sum of £1, 1s.

24. If, after such an award has been made by any of the parties aforesaid, the owner of the ship, goods, or other article in question, shall refuse or neglect either to pay the same, or duly to give notice of such appeal to the Court of Admiralty, or to take out a monition, the receiver at or nearest to the place where such award has been made, is required, within twenty days after the date of the award, and on production of the same, "to sell the property contained in such ship or vessel, or the said goods or other articles as the case may be, or such and so many of the same as in his opinion will be sufficient to defray the salvage and the costs and charges relating thereto, paying the surplus, if any, to the owner or owners thereof." In all cases so decided, the High Court of Admiralty shall have jurisdiction only as a court of appeal in accordance with the provisions of this Act, or for the purpose of forcing payment of the sum awarded.

25. Whenever any sum to be paid for such services, either voluntarily or in consequence of any agreement, or of any arbitration, or of any award made by justices or by commissioners of salvage, or, within the jurisdiction of the Cinque Ports, by any commissioners, shall be distributable between two or more persons, "such sum shall be paid to such person as shall be appointed" by the justices, commissioners, or arbitrators, or under any agreement which may have been made, or in default of any such appointment, then to the master or owner of the ship or boat having rendered the services, or to his agent, or to some person nominated in writing by or on behalf of the majority of the persons among whom the sum is distributable ; and the person to whom any such sum shall be paid shall, within three days after receiving it, or as soon after as may be, proceed to make allotment thereof among the several persons interested in its distribution, and to give notice, in the form contained in the schedule (B) to this Act

annexed, to each person of the whole sum so paid, and of the share thereof allotted to him. Within thirty days after the sum has been paid, or twenty-eight days after the notice has been given (and not afterwards), it shall be lawful for any person claiming a share thereof who shall think himself aggrieved, either by no allotment having been made, or by no notice having been given to him within ten days after the sum shall have been so paid, or by the insufficiency of the share allotted to him, or otherwise, to apply, if the share in question be under £20, to the justices or commissioners who determined the case or within whose jurisdiction it occurred, who shall have full power to adjudge the due distribution of the sum so paid as aforesaid, and the shares of the different parties entitled thereto, which shares may then be recovered in like manner as is provided for the recovery of any penalty under this act. If the share in question amount to £20, the party thinking himself aggrieved may, within the said term of thirty or of twenty-eight days, apply to the High Court of Admiralty for a monition against the person to whom the whole sum was so paid, to bring the said sum, or any part thereof which shall appear not to have been duly distributed, into the registry of that court, and to appear and abide its judgment concerning the distribution; "and in the case of an award, the person by whom such award shall have been made shall, upon monition, send in without delay to the said court a copy of the proceedings before him, and of the award, on unstamped paper, witnessed under his hand, and the same shall be admitted by the court as evidence in the cause; and the amount so awarded, or such part as shall appear not to have been duly distributed, shall be paid to the parties suing out such monition, or distributed according to the judgment of the said court."

26. Whenever it shall appear that any sum awarded or agreed to be paid for salvage services, shall have been duly paid to the person appointed by the justices, commissioners, or arbitrator, or under any agreement, or, in default of such appointment, to the master or owner of the ship or boat having rendered such services, or to the person nominated as aforesaid, as the case may be, then any person thinking himself aggrieved by the insufficiency of the share allotted to him, or otherwise, shall be precluded from enforcing such claim against the ship, or goods to which these services have been rendered, or the owner thereof: and "any party who shall claim to be entitled to any sum which shall remain undistributed in the hands of any person to whom the same may have been paid may, within twelve months after

such payment, have the same remedies for the recovery of such sum from the person to whom the same shall have been paid as are herein-before provided respecting the recovery of shares in any sum paid for salvage services after adjudication of the distribution thereof."

27. When any sum shall be paid for any such salvage, either voluntarily or in consequence of any award having been made in manner aforesaid, or security be given for the payment thereof, and it shall appear that any ship or vessel, goods, or other article, in respect of the saving of which such sum shall have been so paid or such security given, shall be detained, as aforesaid, in the custody of any officer of the customs or of the High Court of Admiralty (as the case may be), it shall not be lawful for the said officer or the said court to permit such ship to depart, or to give up such goods or other article, until the production of a writing signed by the persons to whom the salvage is payable, or some or one of them, which writing shall contain a description of the ship or goods or other article, together with an account of the sums that have been so paid, or of the security given for the same; and the said officer or the court (as the case may be) shall send a copy of such writing to the nearest receiver, who shall transmit the same, or a copy thereof, to the Receiver-General.

28. Any person convicted of cutting away, casting adrift, removing, altering, defacing, sinking, or in any way injuring or concealing any boat, buoy, buoy-rope, or mark, or of committing any act with such intent and design, shall be deemed guilty of felony, and liable to transportation or imprisonment.

29. "If any person shall knowingly or wilfully, and with intent to defraud the true owner thereof, or any person interested therein, purchase or receive any boat, anchor, cable, goods, or merchandise which may have been taken up, weighed, swept for, or taken possession of, if the provisions hereinbefore contained with regard to such articles shall not have been previously complied with, such person shall, on conviction thereof, be deemed guilty of receiving stolen goods, knowing the same to be stolen, and shall be punished accordingly."

30. In case the master, mate, crew, or passenger of any ship or vessel shall find, or shall take in tow, or on board of her, any vessel or boat, anchor, cable, or any goods, merchandise, or other article, from any person who may have found the same, knowing it to have been so found, the master, mate, or other person in command of such ship shall, within twenty-four hours after her arrival at any port in the United King-

dom to which she shall first come, place the said article at the disposal of the receiver, in or nearest to that port, along with a written report containing an accurate description of the article, and the marks, if any, thereon, and the time when, and the bearings and distances, and other minute descriptions of the place where the same was found or taken on board. This report the receiver is to transmit to the secretary of Lloyd's Committee, to be placed by him in some conspicuous situation; and if the article be not claimed by the owner thereof or his agent within twelve calendar months after such transmission, it shall be sold and disposed of by the receiver, and the proceeds of such sale remain and be dealt with in the manner hereinbefore directed with respect to other unclaimed articles. "If the master of such ship or vessel, or such other person, shall not report or place at the disposal of the said receiver," such vessel, boat, anchor, or other article according to the provisions of this act, he shall forfeit all claim to salvage, and on being convicted of the offence before any justice of the peace, forfeit and pay £100, and shall also pay to the owner of the article if claimed, or to her Majesty if it become droits of Admiralty, double its value, which amount may be recovered in the same manner as a penalty under this act.

31. Every person taking any such article to a foreign port or place, and there selling or disposing of it, shall be guilty of felony, and be transported for any term not exceeding seven years.

32, 33, and 34. Every person who shall "trade or deal in buying and selling anchors, cables, sails, or old junk, old iron, or marine stores" of any description, is required to have his name, with the words "Dealer in marine stores," painted distinctly in letters of not less than six inches in length upon the front of all his storehouses, warehouses, and other places of deposit for such goods. It is also declared unlawful "for such dealers or traders to cut up any cable, or any part of a cable, exceeding five fathoms in length, or to uncant, untwine, or unlay the same into junk or paper stuff on any pretence whatsoever, without first obtaining a permit from a justice of the peace, or the receiver residing nearest to the residence of such dealer," conform to certain regulations in the 32d section. They are prohibited from purchasing such stores from any person under fourteen years of age. Any "dealer in marine stores" also is required to keep a book or books in which entries shall be made of all such stores bought by him, or otherwise obtained, containing a true account of the time when they were so bought or obtained, and of the names and places of abode

of the sellers, or of the parties from whom the same were obtained. Other regulations are laid down in these sections; and the whole are guarded by penalties.

35. "Every manufacturer of anchors and kedge anchors shall place his name or initials, together with a progressive number, and also the weight of every anchor, in legible characters upon the crown and also upon the shank under the stock of each anchor respectively which he shall manufacture and in case any such manufacturer shall neglect to place such name, number, or weight in the manner hereinbefore directed and required, he shall for every such neglect forfeit and pay any sum not exceeding five pounds."

36, 37, and 38. These sections regulate the recovery and disposal of penalties, and the trials of all "felonies, misdemeanours and other offences aganst this act."

39. The Commissioners of Customs and Excise are "required to permit all goods, wares, and merchandise, saved from any vessel stranded or wrecked on its homeward voyage, to be forwarded to the port of its original destination, and also to permit goods, wares, and merchandise saved from any vessel stranded or wrecked on their respective outward voyage, to be returned to the port at which the same were shipped; but such commissioners are to take security for the due protection of the revenue in respect of such goods, wares and merchandise."

40. "The High Court of Admiralty shall have jurisdiction to decide, in manner hereinbefore mentioned, upon all claims and demands whatsover in the nature of salvage for service performed, except in cases of goods hereinbefore directed to be sold as droits of Admiralty."

41. "In every case in which any damage shall be done by any foreign ship or vessel to any ship or vessel, barge, boat or other craft, belonging to her Majesty or any of her subjects, whether abroad or otherwise, or to any buoy or beacon in any harbour, port, river, or creek, or within three miles of the coast of the United Kingdom, and it shall appear on a summary application made to any judge of any of her Majesty's Courts of Record at Westminster or elsewhere, or to the judge of the High Court of Admiralty respectively, that such damage or loss has probably been sustained or arisen by the misconduct or negligence of the master or mariners of such foreign ship or vessel, then and in every such case it shall be lawful for any such judge to cause such foreign ship or vessel, being in any harbour, port, river, or creek, or other

place within three miles of the coast of the United Kingdom, to be arrested and detained until the master or owner or consignee of such ship or vessel shall undertake to appear and be defendant in any action which may be brought for such loss or damage, and give such sufficient security, by bail or otherwise, for all costs and damages, if recovered, as shall be directed and ordered by such judge, if it shall upon the trial of such action or suit appear that such loss or damage shall have arisen from such negligence or misconduct as aforesaid; and in such action or suit the person giving security shall be made defendant, and shall be stated to be the owner of the foreign ship or vessel doing such damage; and it shall not be necessary in any such action or suit to give any other evidence of the liability of such person to such suit or action than the production of the order of the judge made in relation to such security as aforesaid; and any collector or comptroller of the customs shall, upon notice served upon him of the fact of such application having been made as aforesaid, have power and is hereby required to detain such ship or vessel until the result of such application shall be made known."

42. Within the jurisdiction of the Cinque Ports, every serjeant of the Lord Warden of the Cinque Ports, and his deputy, shall have the same power and authority, and be liable to the same duties and services, as are hereinbefore enacted with respect to the receivers of droits of Admiralty, and all provisions in this act contained relating to such receivers shall, within that jurisdiction, extend and apply to the said serjeants and their deputies in as full and ample a manner as if the same were now again in that behalf set forth and repeated; save and except that the reports hereinbefore directed to be sent by the said receivers to the Receiver-General shall, within the jurisdiction of the Cinque Ports, be sent by the said serjeants or deputy-serjeants to the Lord Warden; and every fee or other gratuity to be paid to the serjeants or deputy-serjeants, shall be regulated according to the judgment of the Lord Warden for the time being.

43. Nothing in this act shall in any manner affect or interfere with the rights, privileges, authority, or jurisdiction of the said Lord Warden, or of the Cinque Ports, "two ancient towns and members thereof," or in any manner affect, repeal, or interfere with the provisions of an act passed in the first and second years of the reign of his Majesty King George the Fourth, intituled, "An act to continue and amend certain acts for preventing the various frauds and depredations commit-

ted on merchant shipowners by boatmen and others within the jurisdiction of the Cinque Ports; and also for remedying certain defects relative to the adjustment of Salvage under a statute made in the twelfth year of the reign of her late Majesty Queen Anne."

44. The remedies provided, in cases of the malicious demolition of churches and other buildings, by an act passed in 7 and 8 Geo. IV., intituled, "An act for consolidating and amending the laws in England relative to remedies against the hundred," and by an act passed in 3 and 4 Will. IV., intituled, "An act to alter and amend the laws relating to the temporalities of the Church in Ireland," are extended to cases where "any ship or vessel which may be in distress, wrecked, or stranded, or run on shore, or any part of the cargo thereof, shall be plundered, damaged, or destroyed, wholly or in part, near to or on any of the coasts of England, Wales, or Ireland, or in any of the harbours, havens, rivers, creeks, or bays thereof, by any persons riotously and tumultuously assembled together, whether on shore or afloat." The first-mentioned act to apply in such cases to England and Wales, and the other to Ireland.

45. "Every person who shall wrongfully carry away or remove any part of any ship or vessel which shall be in distress, or wrecked, stranded, or cast on shore, or any goods, merchandise, or article of any kind, belonging to such ship or vessel, or (unless the same person shall be a receiver, or other officer, or justice, hereinbefore authorized to give orders in cases of wreck, as aforesaid) shall enter or endeavour to enter on board of any such ship or vessel as aforesaid, without the consent or leave of the master, commander, or other superior officer thereof, or of a receiver or other officer so authorized to give orders in cases of wreck, or shall molest or impede any person employed in the saving of such ship or vessel or goods as aforesaid, or shall endeavour to impede or hinder the saving of any ship or vessel or goods as aforesaid, shall for every such offence forfeit and pay any sum not exceeding £50; and where any such person shall have been detained, or taken before any justice of the peace, for any such offence, it shall be lawful for such justice of the peace to proceed summarily on the case without any information, and to convict such person of such offence, and in default of payment of such penalty, to commit such person to any of her Majesty's gaols for any time not exceeding six months, with or without hard labour; and it shall be lawful for the said master, commander,

or superior officer of the said ship or vessel so in distress as aforesaid, or the said receiver or other officer hereinbefore authorized to give order in cases of wreck, respectively to repel by force any such person as shall, without such leave or consent as aforesaid, press on board such ship or vessel: Provided always, that nothing herein contained shall be construed to repeal or in anywise affect or alter any provision contained in an act passed in the seventh year of the reign of his late Majesty King William the Fourth and first year of the reign of her present Majesty Queen Victoria, intituled, 'An Act to amend the laws relating to robbery and stealing from the person.'"

46. "Nothing in this act contained shall be construed to alter or repeal any of the clauses or provisions contained in an act passed in the sixth year of the reign of his Majesty King George the Fourth, intituled, "An act for the amendment of the law respecting pilots and pilotage; and also for the better preservation of floating lights, buoys, and beacons;" nor to alter or repeal any of the clauses or provisions contained in various other statutes enumerated in this section of the act.

47, 48, and 49, reserve the rights of her Majesty, her heirs or successors, the jurisdiction of the High Court of Admiralty, and that of the Admiralty Court of the Cinque Ports, as well as the rights, liberties, privileges, and authority of several corporations, &c., noticed in these sections.

50. "This act shall extend to all parts of the United Kingdom except Scotland."

51. "For the interpretation of this Act, be it enacted, that the following terms and expressions, so far as they are not repugnant to the context of this Act, shall be construed as follows—(that is to say,) the expression "Commissioners of the Treasury," shall mean "the Lord High Treasurer for the time being, or the Commissioners of her Majesty's Treasury for the time being, or any three or more of them;" and the expression "Commissioners of Admiralty" shall mean "the Lord High Admiral of the United Kingdom of Great Britain and Ireland for the time being, or the Commissioners for executing the office of such Lord High Admiral, or two or more of them;" and the expression "High Court of Admiralty" shall mean the High Court of Admiralty of England, or the High Court of Admiralty of Ireland, according as the case may arise within the jurisdiction of one or the other of the said courts."

SCHEDULES REFERRED TO IN THE FOREGOING ACT.

SCHEDULE (A).

On the day of in the year of our Lord before, &c. at in the county of

(Ship's Names.)

A. B. (here insert the names of the salvors), against the said ship whereof was master, her tackle, apparel, and furniture, and the goods, wares, and merchandise on board the same, and also against the said master, and the owners of the said ship and cargo, or, (as the case may be) against certain goods and merchandise lately laden on board the said ship, whereof was master, and also against the said master and the owners (or, if the owners alone appear, by themselves or their agents, then leave out the master's names) of the said goods and merchandises, or (as the case may be) against certain goods and merchandises, and the owners of the said goods and merchandises, in a case of salvage.

(Master's names.)

On which day appear personally W. X. of and Y. Z. of who produced themselves as sureties for the said the master, and for the owners of the said ship and cargo, or (as the case may be) for the said master and owners, or (as the case may be) for the said owners of the said goods and merchandises, and submitting themselves to the jurisdiction of the High Court of Admiralty of England (or the High Court of Admiralty of Ireland, or the Court of Admiralty for the Cinque Ports, as the case may be), bound themselves, their heirs, executors, and administrators, for the said master and owners of the said ship and cargo, or (as the case may be) for the said master and owners, or for the owners of the said goods and merchandises, in the sum of pounds of lawful money of Great Britain, unto the said A. B., &c., to answer the salvage and expenses of the said ship and cargo, or (as the case may be) on the said goods and merchandises, as shall hereafter be deemed by the said court according to the tenor of the Act in that behalf made and

provided; and unless they shall so do, they hereby consent that execution shall issue forth against them, their heirs executors, and administrators, goods and chattels, wheresoever the same shall be found, to the value of the sum above mentioned.

This bail was duly taken, acknowledged, and received at the time and place above written, before me, the undersigned receiver of droits of Admiralty; and I do hereby farther certify, that I do believe and consider the persons above mentioned sufficient security for the sum of pounds. } W. X. Y. Z.

SCHEDULE (B).

To A. B. of

In the matter of the vessel of whereof C. D. was master (or goods salved at).

Take notice, that the whole sum paid over to me, to be distributed for salvage services rendered to the above mentioned vessel (or goods) on the day of 184 , is £ . That the sum allotted to you is £ .

E. F.
Distributor.

Dated this day of 184 .

No. II.

STEAM NAVIGATION ACT.

[The following is an abstract of the Act 9 and 10 Victoria, cap. 100, "for regulating the construction of Sea-going Steam-Vessels, and for preventing the occurrence of accidents (so far as may be possible) in Steam Navigation, and for requiring Sea-going Vessels to carry Boats:"]

1. This Act shall come into operation on 1st January 1847, except where any other period of commencement is herein particularly directed.

2. "All Steam-Vessels built of iron, of one hundred tons burden, or upwards, the building of which shall have been

commenced after the passing of this Act, shall be divided by transverse water-tight partitions, so that the fore-part" and the after-part of such vessel shall each be separated from the engine-room by one of such partitions.

3. From and after the 1st day of January 1847, "no vessel, the tonnage of which shall be one hundred tons or upwards, shall proceed to sea from any port whatsoever, unless it shall be provided with boats duly supplied with all requisites for their use, and not being fewer in number, nor less in their dimensions, than the number and dimensions set opposite to the limits of dimension in the following table; provided that the said limits of dimension be not considered applicable to vessels engaged in the whale fishery:—

Tonnage of Vessel.	Number of Boats.	Long Boat, Launch, or Pinnace.		Other Boats.					
		Lngth	Brdth	Lngth	Brdth	Lngth	Brdth	Lngth	Brdth
		feet.	*ft. in.*	*feet.*	*ft. in.*	*feet.*	*ft. in.*	*feet.*	*ft. in.*
850 and upwards	4	26	8 0	24	7 0	22	6 6	16	5 6
650 to 850	4	24	7 0	22	6 6	18	5 6	16	5 6
350 to 650	3	20	6 6	18	5 6	..	..	14	5 0
200 to 350 inclusive	2	18	6 0	..	..	00	..	14	5 0
100 to 200	2	..	..	6	5 6	and a punt or small boat.			

and that no vessel carrying more than ten passengers shall proceed to sea on any voyage, unless, in addition to the boats hereinbefore required, it shall also be provided with a boat fitted up as a life-boat, with all requisites for its use, together with two life-buoys.

4. "Every steamer, the building of which shall be commenced after the passing of this act, and which shall proceed to sea with passengers, shall, in addition to the boats specified in the foregoing table, and in lieu of a boat fitted up as a life boat, be provided either with such boats as are usually called paddle-box boats," "or with such other boats as the Admiralty may direct."

5. No steam-vessel of 100 tons burden or upwards, shall proceed to sea "unless it shall be provided with a hose for the purpose of extinguishing fire, capable of being connected with the engines of the vessel."

6. "For the purposes of this Act, the tonnage of vessels shall be ascertained according to the rules of admeasurement prescribed by any Act of Parliament for the time being in

force, regulating the admeasurement of the tonnage and burden of the merchant ships of the United Kingdom."

7. If any such steam or other vessel shall proceed to sea without conforming to the above regulations, or if any of the boats which she is hereby required to carry "be lost or rendered useless in the course of the voyage, through the wilful fault or negligence of the owner or master, or if in case of any of such boats being accidentally lost or injured in the course of the voyage, the master or other person having charge of the vessel wilfully neglect to replace or repair the same on the first convenient opportunity, then and in every case where the owner shall appear to be in fault, he shall forfeit a sum not exceeding one hundred pounds, and in every case where the master or other person having charge of the vessel shall appear to be in fault, he shall forfeit a sum not exceeding fifty pounds."

8. It shall not be lawful for any officer of customs to clear out any such steamer or other vessel, unless the above-mentioned provisions be complied with.

9. "Every steam-vessel, when meeting or passing any other steam-vessel, shall pass as far as may be safe on the port side of such other vessel; and every steam-vessel navigating any river or narrow channel shall keep, as far as is practicable, to that side of the fairway or mid-channel of such river or channel which lies on the starboard side of such vessel, due regard being had to the tide and to the position of each vessel in such tide; and the master or other person having the charge of any such steam-vessel, and neglecting to observe these regulations, or either of them, shall for each and every instance of neglect forfeit and pay a sum not exceeding fifty pounds."

10. "The Lord High Admiral, or the Commissioners for executing the office of Lord High Admiral, may, from time to time, make regulations requiring the exhibition of such lights by steam-vessels in such manner, within such places except the river *Thames* above *Yantlett Creek*, and under such circumstances, as the said Lord High Admiral or the said Commissioners may think fit, and may from time to time make any other regulations revoking or altering any previous regulations."

11. These regulations shall be published in four successive *London Gazettes*, and shall be deemed to be in force from the date of the last of such publications until their alteration or revocation be twice published in like manner.

12. "The master, or other person having the charge of any steam-vessel which shall be in any river or narrow channel in Great Britain or Ireland, or the adjacent islands, or upon the sea within twenty miles of any part of the coast of Great Britain or Ireland, shall, whether under weigh or at anchor, between sunset and sunrise, exhibit such lights within such places, in such manner, and under such circumstances as by the said regulations hereinbefore authorized to be made by the said Lord High Admiral or by the said Commissioners shall be required; and in default thereof shall forfeit and pay a sum not exceeding twenty pounds for every night in which such default shall be made; and the owner of any steam-vessel in which such light shall not be exhibited as aforesaid, shall not be entitled to recover any recompense or damage whatsoever which may be sustained by such vessel in consequence of any other vessel running foul thereof during the night."*

13. Any damage resulting from the non-observance as respects any steam-vessel, of the rules here laid down as to the passing of steam-vessels and exhibiting of lights, shall, in the absence of proof to the contrary, be held to have been occasioned by the wilful default of the master or other person in charge of such steamer, who shall be subject to the legal consequences of such default.

14. "On or before the thirtieth day of April and the thirty-first day of October in every year, the owners of every steam-vessel shall transmit to the Lords of the Committee of Privy Council for Trade the two following declarations in writing; (that is to say)

"First, a declaration of the sufficiency and good condition of the hull of such steamer, under the hand of a ship-wright-surveyor, to be approved by the Lords of the said Committee.

"Second, a declaration of the sufficiency and good condi-

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* NOTE.—In the case of a collision between the *Iron Duke* steamer, and the brig *Parana*, which came before the Judicial Committee of the Privy Council on 18th June 1846 (reported in the *Shipping Gazette* of 26th June, and afterwards discussed in that paper with reference to the Steam Navigation Act), Baron Parke, in delivering the judgment of the Committee affirming Dr Lushington's decision, observed, "If the night was so dark that the watch in the forecastle could not descry an object on the sea beyond a given distance, *the speed of the steamer should have been moderated* (she was going twelve knots), and so regulated that an object might have been avoided by altering her course in the time which it would take to traverse that distance; and if it should be said that the night was so dark or so misty that a vessel could not have been discerned so as to be avoided at any degree of speed (a very improbable supposition), *the steamer should have remained stationary.*"

tion of the machinery of such steam-vessel, under the hand of an engineer, to be approved in like manner by the Lords of said Committee; such declarations bearing date of some day in the said months of April or October respectively.

"And the Lords of the said Committee shall register such declarations, and shall transmit to the owners of such steam-vessels respectively certificates under the hand of one of the secretaries or assistant secretaries of the said committee, of the registry of such declarations: Provided always, that if the owners of any such vessel shall certify to the Lords of the said Committee that such vessel has been, during the whole of such month of April or of October respectively, and still is in foreign parts," so that it is impossibie to obtain the declarations bearing date as herein prescribed, and shall at the same time transmit to the Lords of the said committee the declarations so required, bearing date of a day not being more than seven days before such vessel last sailed or departed from any part of the United Kingdom, then and in every such case the Lords of that committee shall register such declarations, and shall transmit to the owners certificates of the registry of such declarations: "Provided nevertheless that this enactment shall not extend or apply to any steam-vessels so employed as hereinafter mentioned during the continuance of such employment, (that is to say) whilst employed in the Royal Mail service or the conveyance of the royal public mails or despatches under contract with and under the superintendence of the Admiralty."

15. And whereas it may happen that, by reason of a steam-vessel or the machinery thereof being under repair during either of the months of April or October, it may be impracticable to make such declarations in either of these months, in such case it shall be lawful for the owners of such steam-vessel at any time to make a representation to that effect to the Lords of the Committee of Privy Council for Trade, and to transmit therewith such declarations as are herein-before required, and it shall be lawful thereupon for the said Lords, if they shall be satisfied of the truth of such declarations, to register the same notwithstanding they shall not bear date in April or October, and to transmit certificates of the registry thereof to the owners in manner hereinbefore provided.

16. From and after 1st June 1847, it shall not be lawful for any steam-vessel to proceed to sea unless these necessary declarations have been transmitted and the certificates of their

registry have been received, nor shall it be lawful for any officer of customs to clear out any steam-vessel carrying passengers for any voyage to parts beyond the seas, unless upon production of the certificate of the registry of the declarations which shall most recently have been made in respect of that vessel, and unless the declarations have been so made within six calendar months of the application for clearance.

17. If any steam-vessel proceed to sea with passengers, the owner whereof has not transmitted such declarations and received such certificates, he shall forfeit a sum not exceeding £100.

18. This section enacts how the forgery of a declaration or certificate shall be punishable.

19. "Whenever any steam-vessel shall have sustained or caused any serious accident, occasioning loss of life or property, or received any material damage affecting her seaworthiness, either in her hull or her engine, by grounding, or by collision with any other vessel, or by any other means, the master or other person having the charge of such vessel, shall, as soon as conveniently may be, transmit through the post-office, by letter addressed to the Lords of the Committee of Privy Council for Trade, and signed by such master or other person, a report of such accident or damage, and the probable occasion thereof; stating therein the name of the vessel, the port to which she belongs, and the place where she is, in order that the Lords of the said Committee may, if they think fit, investigate the matter; and should the owner or owners of any steam-vessel, from her non-appearance or otherwise, have reason to apprehend that such steam-vessel is wholly lost, he or they shall, as soon as conveniently may be, in like manner, send notice thereof to the Lords of the said Committee; and every owner, master, or such other person as aforesaid, who shall neglect to send such notice as hereby is required within a reasonable time after any such accident shall have happened, shall for every such offence forfeit and pay a sum not exceeding fifty pounds."

20. In case of any such accident as those above enumerated, "it shall be lawful for the Lords of the said Committee to appoint any proper person or persons as inspector or inspectors, to inquire into and to report upon such accident; and it shall be lawful for every person so authorized, at all reasonable times, upon producing his authority, if required, to go on board and inspect any such steam-vessel, and the machinery thereof, and every part thereof respectively, not detaining or delaying

the vessel from proceeding on her voyage, and to make such inquiries as to the nature, circumstances, and causes of such accident, as he or they may think fit."

21. "The said inspectors, or any of them, shall be, and they are hereby empowered, by summons under their or his hands or hand, to require the attendance of all such persons as they or he shall think fit to call before them or him, upon any question or matter connected with or relating to the execution of any of the powers and duties vested by this Act in the said inspectors; and also to make inquiries and to require answers or returns thereto in relation to any such matters; and for the purpose aforesaid to administer oaths, and to examine all persons upon oath, and to require and enforce the production, upon oath, of all log-books, accounts, agreements, or other papers or writings in anywise relating to every such matter as aforesaid, or, in lieu of requiring or administering an oath, that the said inspector or inspectors may, if he or they think fit, require every such person to make and subscribe a declaration of the truth of the matters respecting which he shall be, or shall have been examined or interrogated: Provided always, That no such person shall be required, in obedience to any such summons, to travel more than ten miles from his actual abode at the time of receiving such summons, unless tender shall be made to him of such reasonable expenses, in respect of his attendance to give evidence, and his journeys to and from the place where he shall be required to attend for that purpose, as would be allowed to any witness attending on subpœna to give evidence before any of her Majesty's courts at Westminster; and in case of any dispute as to the amount of such expenses, the same shall be referred by the inspectors to one of the masters of her Majesty's court of Queen's Bench, who is hereby required to ascertain and certify the proper amount of such expenses, on a request made to him for that purpose, under the hands of the said inspector or inspectors."

22. This section empowers the inspector or inspectors above mentioned, or any individuals whom they may call to their assistance, to seize and detain any persons who shall wilfully obstruct them in the execution of their duty, till such offenders can be conveniently taken before a justice of the peace.

The remaining sections contain, for the most part, provisions as to the recovery and application of penalties imposed by this Act. By the 36th and 37th sections it is provided that nothing in the Act contained shall extend to any of her

Majesty's ships of war, nor to any vessel not being a British registered vessel, nor shall be construed as repealing or altering any of the provisions of the Act 5 and 6 Vict. c. (107) for regulating the carriage of passengers in merchant vessels.

No. III.

CUSTOMS' AMENDMENT ACT.

[The following are the leading provisions of the Act 9 and 10 Vict., c. 102, to amend the Laws relating to the Customs. 28th August 1846.]

1. That from and after the passing of this Act it shall come into full force and operation for the purposes mentioned therein, except where any other commencement is hereinafter particularly directed.

2. That it shall be lawful to import into the United Kingdom, into any of the ports named in the table of prohibitions and restrictions inwards contained in the Act 8 and 9 Vict., c. 86, " as ports into which tobacco may be imported, or into any port which may have been or hereafter may be appointed for such purpose by the commissioners of her Majesty's Treasury, any tobacco the produce of the island of Porto Rico, and any tobacco the produce of Trinidad, or of Mexico or of South America, or of the islands of Saint Domingo or Cuba, or any tobacco which can and shall be legally imported from Malta for home consumption, in packages, each containing at least eighty pounds net weight of such tobacco."

3. "That Negrohead tobacco the produce of and imported from the United States of America shall be prohibited to be imported into the United Kingdom, *unless* in packages each containing at least one hundred and fifty pounds net weight of such tobacco;" and that this restriction "shall not be construed to prevent the importation of such tobacco in packages of that size, provided such importation be in other respects effected in a legal manner."

4. "That it shall be lawful to import into the United Kingdom any Geneva in glass bottles containing not more than three pints in each of such bottles, such Geneva being really part of the cargo of the ship in which the same is imported, and included in the manifest or other papers enumerating or descriptive of the cargo thereof."

5. "That all goods subject to restrictions as to package upon the importation thereof into the United Kingdom, shall be subject to the same restrictions when such goods are brought into the United Kingdom for exportation in the ship in which they are so brought, and that all goods so brought contrary, to such restrictions, whether reported for exportation in the same ship or not, shall be forfeited."

6. "That if any goods which may have been imported into the United Kingdom from foreign parts, or which shall hereafter be so imported, shall be removed from any vessel, quay, wharf, or other place previous to the examination thereof by the proper officer of the customs, except by an order of or with an authority in writing from such officer, and for such purpose as shall be therein mentioned or expressed, and in due conformity therewith, every person who shall assist or be otherwise concerned in such removal, or who shall knowingly harbour, keep, or conceal, or shall knowingly permit or suffer to be harboured, kept, or concealed, any such goods, or to whose hands and possession any such goods shall knowingly come, shall forfeit either the treble value thereof or the penalty of one hundred pounds, at the election of the commissioners of her Majesty's customs."

7. "That so much of the said last mentioned Act as prohibits the importation of articles of foreign manufacture bearing any names, brands, or marks purporting to be the names, brands, or marks of manufacturers resident in the United Kingdom, and of packages of such articles, and of clocks and watches of any metal, shall be and the same is hereby repealed."

8. "That any articles of foreign manufacture, and any packages of such articles, imported into the United Kingdom or into the British possessions abroad, bearing any names, brands, or marks purporting to be the names, brands, or marks of manufacturers resident in the United Kingdom, shall be forfeited, and that such articles and packages of articles shall not be warehoused for exportation."

9. "That foreign clocks and watches of any metal impressed with any mark or stamp appearing to be or to represent any legal British assay mark or stamp, or purporting by any mark or appearance to be of the manufacture of the United Kingdom, or not having the name and place of abode of some foreign maker abroad visible and permanently marked or engraved on the frame, and also on the face, or not being in a complete state, with all the parts properly fixed in

the case, imported into the United Kingdom, shall be forfeited."

10. "That so much of the said Act as enacts that the master of every ship arriving from any foreign place in Europe at any port in the United Kingdom shall report the general denomination of the contents of every package containing cambrics or lawns, leather gloves, manufactures of silk, tobacco, cigars, or snuff, shall, from and after the first day of March one thousand eight hundred and forty-seven, be extended to ships arriving from any place whatever at any port in the United Kingdom, and that all such last-mentioned goods not so reported according to the best of the knowledge of such master, shall be forfeited; and that the master of every such ship failing to make such report shall forfeit the sum of one hundred pounds."

11. "That upon the clearance for shipment of any foreign goods which were formerly charged with duty according to the value thereof, but upon which goods the duties have been repealed, an account, containing an accurate specification of the quantity, quality, and value of such goods, together with a declaration to the truth of the same, signed by the exporter or his known agent, shall be delivered to the searcher by the person clearing such goods; and if such declaration be false, the person signing the same shall forfeit the sum of twenty pounds; and that it shall be lawful for the searcher to call for the invoice, bills of parcels, and such other documents relating to the goods as he may think necessary for ascertaining the true value of the same: Provided always, that if such exporter or agent shall make and subscribe a declaration before the collector or controller that the value of the goods cannot be ascertained in time for the shipment of the same, and such declaration shall be delivered to the searcher at the time of clearance, a further time of three months shall be allowed for the delivery of such separate shipping bill, on failure whereof such exporter or agent shall forfeit the sum of twenty pounds."

12. "That there shall be allowed to every master, surgeon, and purser of her Majesty's ships in actual service, the same quantity of wine, duty free, as is now by law allowed to every lieutenant and other commanding officer, or to every marine officer."

13. That so much of the Act 8 and 9 Vict. c. 86 as relates to legal quays shall be repealed.

14. "That it shall and may be lawful for the commissioners of her Majesty's Treasury of the United Kingdom of Great Britain

and Ireland, by their warrant in writing under the hands of any three or more of them, to appoint any port or sub-port in the United Kingdom, or in the Islands of Guernsey, Jersey, Alderney, Sark, or Man, and to declare the limits of any such port or sub-port, and to appoint proper places within the same to be legal quays, for the lading and unlading of goods, and to declare the bounds and extent of any such quays."

15. That the said commissioners shall have power to annul the limits or to alter the names, bounds, and limits of any such port, sub-port, haven, creek, or legal quay.

16. That every appointment, annulment, or alteration of such ports, &c. shall be published in the *London Gazette* as to those in Great Britain or the channel islands, and in the *Dublin Gazette* as to those in Ireland.

17. That all existing appointments of ports, &c., and legal quays shall continue in force until altered by warrant under the powers of this act.

18. "That this act shall be registered in the Royal Courts of the Islands of Guernsey and Jersey respectively, and that the said Royal Courts respectively shall have full power and authority and are hereby required to register the same."

19. "That if any indecent or obscene prints, paintings, books, cards, lithographic or other engravings, or any other indecent or obscene articles, shall be imported into the United Kingdom, the same shall be forfeited, and shall and may be seized by any officer of her Majesty's customs, and destroyed as the commissioners of her Majesty's customs shall direct."

20. That it shall be "lawful to and for any clerk or officer of the customs, under the orders or directions of the commissioners of her Majesty's customs, to prosecute, defend, or conduct any proceeding, matter, or thing before any justices or justice in any matter relating to the customs, to be heard or determined by or before such justices or justice, in the same manner as if such clerk or officer had been and were a duly admitted and enrolled attorney, solicitor, advocate, or writer to the signet of her Majesty's courts of record in the United Kingdom, any enactment in force at the time of the passing of this act to the contrary notwithstanding."

21. That in lieu of the customs' duties now payable, the duties mentioned in the table hereto annexed shall be exigible, on the articles enumerated therein.

22. "That no duties of customs shall be chargeable upon the following articles:—

Stone—Mill Stones, rough;
——— shaped or hewn;
Burr Stones, rough;
——— shaped or hewn;
Quern Stones, rough;
——— shaped or hewn;
Dog Stones, rough;
——— shaped or hewn;
Yarn—Raw worsted yarn, not dyed nor coloured, and not being fit or proper for embroidering or other fancy purposes;
Mats—Dunnage mats, not being of greater value than ten shillings the hundred."

23. "That all manufactures of silk, or of silk mixed with any other materials, not particularly enumerated or otherwise charged with duty, of and from a British possession, shall be charged with a duty of five pounds for every one hundred pounds of their value, and so in proportion for any greater or less value."

24. "That all goods whatsoever which shall have been warehoused without payment of duty upon the first importation thereof, and which shall be in the warehouse at the commencement of the duties imposed by this act, shall be deemed and taken to be liable to such duties."

TABLE OF DUTIES REFERRED TO IN THE FOREGOING ACT.

Flowers, artificial, not made of Silk, for every £100 value	£25	0	0
Liquorice Juice and Liquorice Paste, the cwt. . .	1	0	0
——— of and from a British possession, the cwt. .	0	10	0
Nutmegs, the lb.	0	2	6
——— Wild, in the Shell, the lb.	0	0	3
Spirits or Strong Waters, for every gallon of such Spirits or Strong Waters of any strength not exceeding the strength of proof by Sykes' Hydrometer, and so in proportion for any greater or less strength than the strength of proof, and for any greater or less quantity than a gallon—viz.			
——— Spirits or Strong Waters the produce of any British possession in America, not being sweetened Spirits, or Spirits mixed with any article so that the degree of strength thereof cannot be exactly ascertained by such Hydrometer, the gallon . .	0	8	10
——— Rum the produce of any British possession within the limits of the East India Company's charter, not being sweetened spirits, or spirits so mixed as aforesaid, in regard to which the conditions of the act 4 Vict. c. 8, have or shall have been fulfilled, the gallon	0	8	10

——— Rum Shrub, however sweetened, the produce of and imported from such possessions, in regard to which the conditions of the act 4 Vict. c. 8. had or shall have been fulfilled, or the produce of and imported from any British Possession in America, the gallon	0	8	10
Platting—viz., Willow Squares, for every £100 of the value thereof	10	0	0"

No. IV.

GENERAL REMARKS.

1. The Wreck and Salvage Act, the Steam Navigation Act, and the Act to amend the Laws relating to the Customs, abstracts of which are given above, were passed on the 4th of August 1846, while the preceding pages were in the press. Reference is to be made to the first of these, under the heads, *Admiralty, Anchor, Buoy, Cinque Ports, Collision*, and *Customs*; and to the Steam Navigation Act, under the heads, *Boat, Buoy (Life), Clearing, Collision, Iron, Lantern, Lifeboat*, and *Paddles*.

2. Instead of the acts mentioned in relation to the customs, to navigation, and to the registering of British vessels, under the heads *Bulk, Cargo-Book, Condemnation, Customs, Muster-Roll, Navigation Laws*, and *Registry of Ships*, reference falls to be made to the several acts passed on the 4th of August 1845—viz.

An act for the management of the Customs, 8 and 9 Vict. c. 85; an act for the regulation of the Customs, 8 and 9 Vict. c. 86; an act for the encouragement of British Shipping and Navigation, 8 and 9 Vict. c. 88; and act for the registering of British vessel's, 8 and 9 Vict. c. 89. The new edition of *Steel's Shipmasters Assistant* by Graham Willmore, George Clements, and William Tate, contains abstracts of these statutes, *the provisions of which do not affect or alter the explanations given in the articles of the Dictionary here enumerated.*

The act 8 and 9 Vict. c. 93, regulates the trade of British possessions abroad; and the 8 and 9 Vict. c. 94, regulates the trade of the Isle of Man. As already shown, the acts consolidating the customs' laws are altered and amended by the 9 and 10 Vict. c. 102, of which an abstract is given above, (No. III. of Appendix). "The British Tariff, by Edwin

Beedell" (which is in the course of publication), is stated to contain, among a variety of other important matters, *A list of countries and divisions of countries, as they are to be distinguished in the returns made to the Inspector-General of imports and exports, and the Registrar-General of shipping; and a list, alphabetically arranged, of ports or places of shipment comprehended in the several countries and divisions of countries specified in the first mentioned list.*

3. By the act 5 and 6 Vict. c. 17, amended by 8 and 9 Vict. c. 45, every ship clearing out from any port in British North America, or in the Settlement of Honduras, at any time after 1st September and before 1st May in each year, wholly or in part laden with timber or wood goods, is prohibited from having any part of the cargo upon or above the deck, until she arrive at her port of destination, unless the removal of any portion of it upon deck be deemed necessary in consequence of the springing of a leak or of other damage received or apprehended during the voyage. But the store spars, or other articles necessary for the vessel's use, are not taken to be cargo for the purposes of this act.

4. The act 8 and 9 Vict. c. 86, empowers the commissioners of customs to enquire into and receive proof of the extent to which foreign goods derelict, jetsam, flotsam, and wreck coming into the United Kingdom, and all droits of Admiralty sold there, have been damaged, and to make such abatement of the duties payable thereon as to them shall appear to bear a just proportion to such damage; certain kinds of goods are excepted.

5. According to the arrangements and regulations of the Lords of the Committee of Privy Council for trade, and the Lords of the Admiralty, examiners have been appointed at various ports in the United Kingdom for the examination of masters and mates in the merchant service, voluntarily presenting themselves for this purpose. The Lords of the said Committee are from time to time to publish in the *London Gazette* the names and classes of the persons who have obtained certificates from such examiners, and likewise to communicate the same to the committee for managing the affairs of Lloyd's Register of British and Foreign Shipping, which committee "are to denote in their list such persons as shall have obtained certificates, by affixing the figures denoting the particular class of certificate held by such persons."

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